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JULY 24, 1942.

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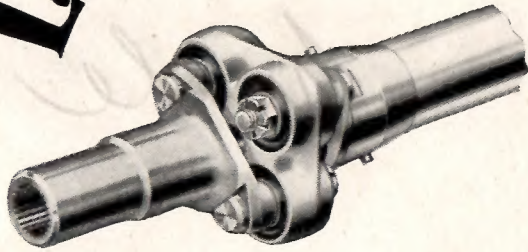
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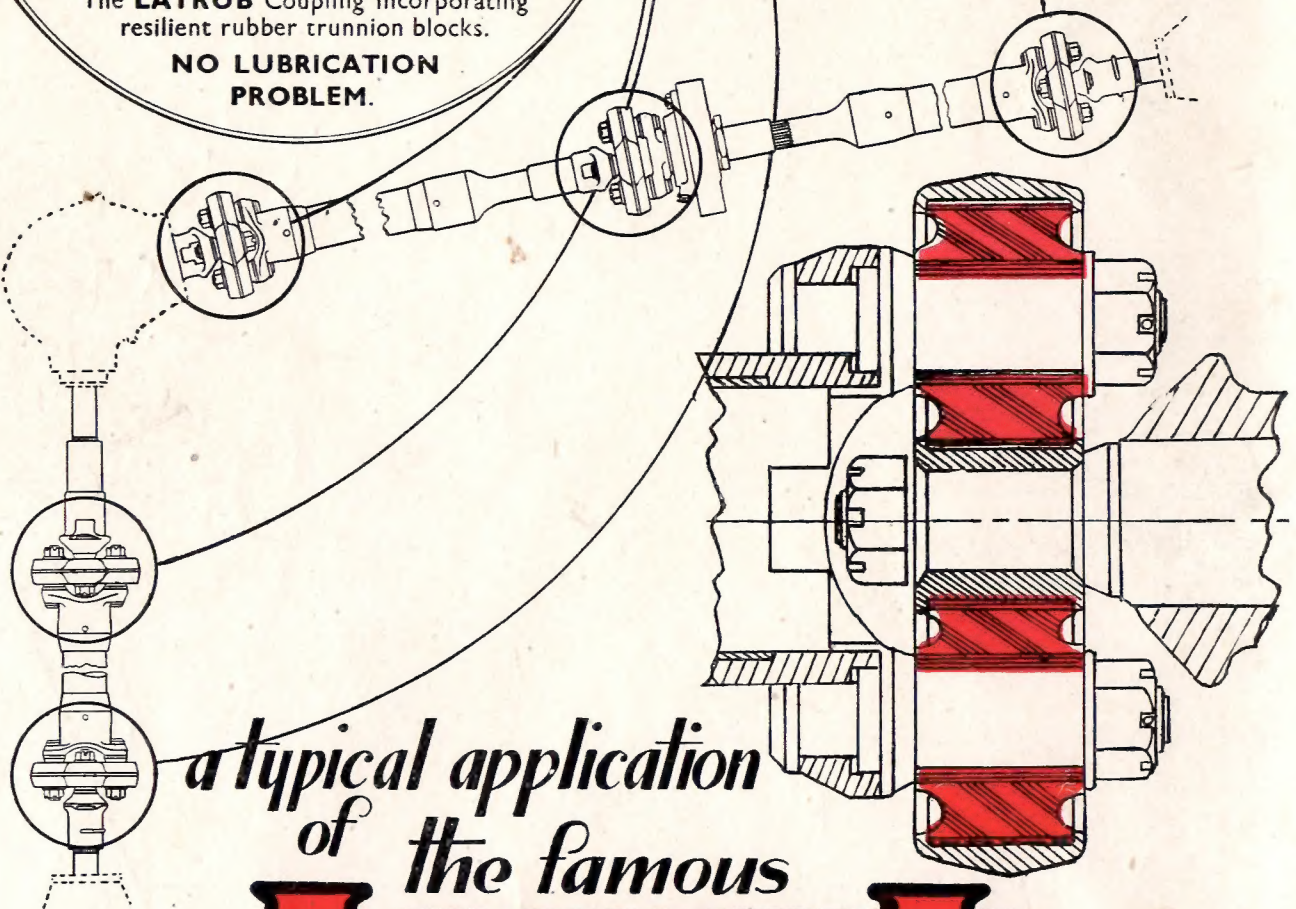


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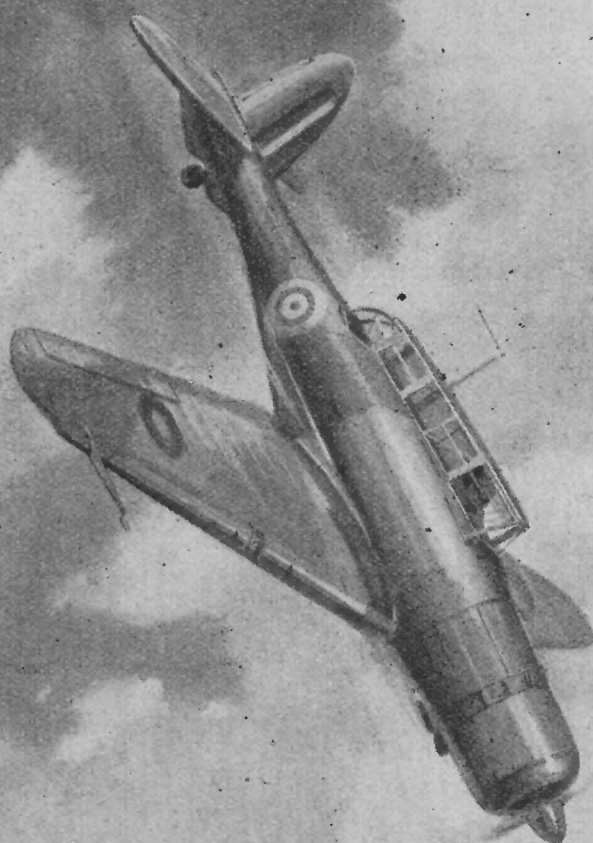
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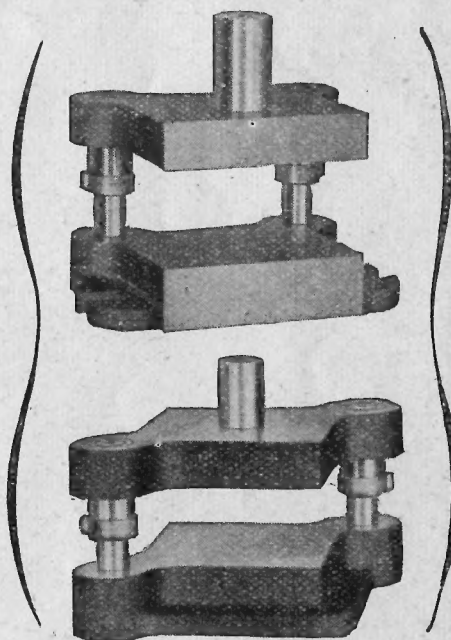


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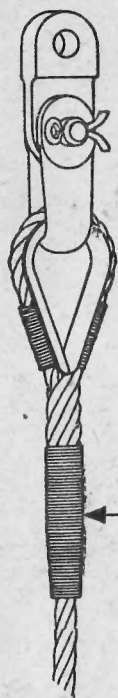
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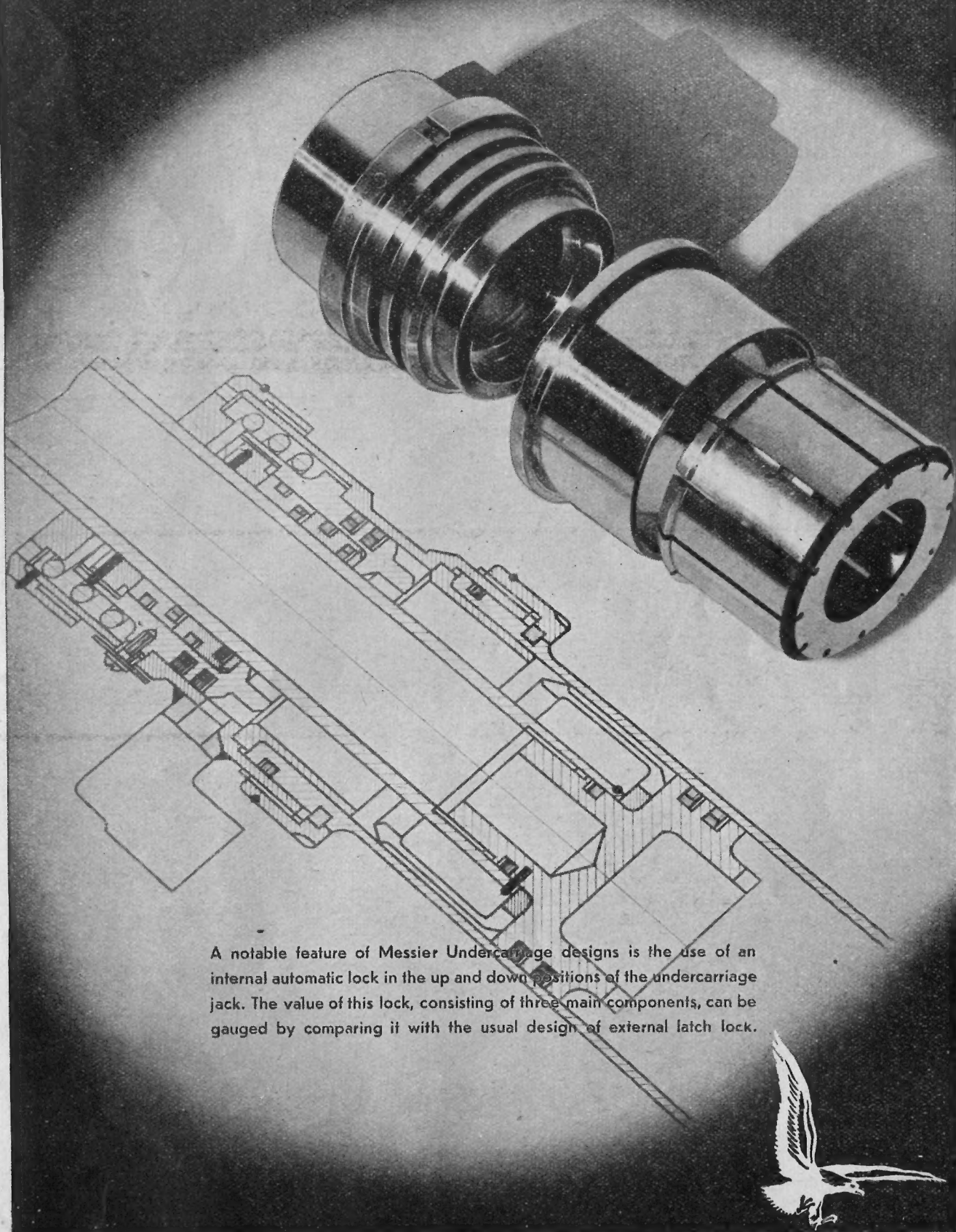
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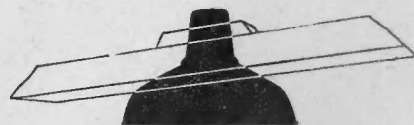




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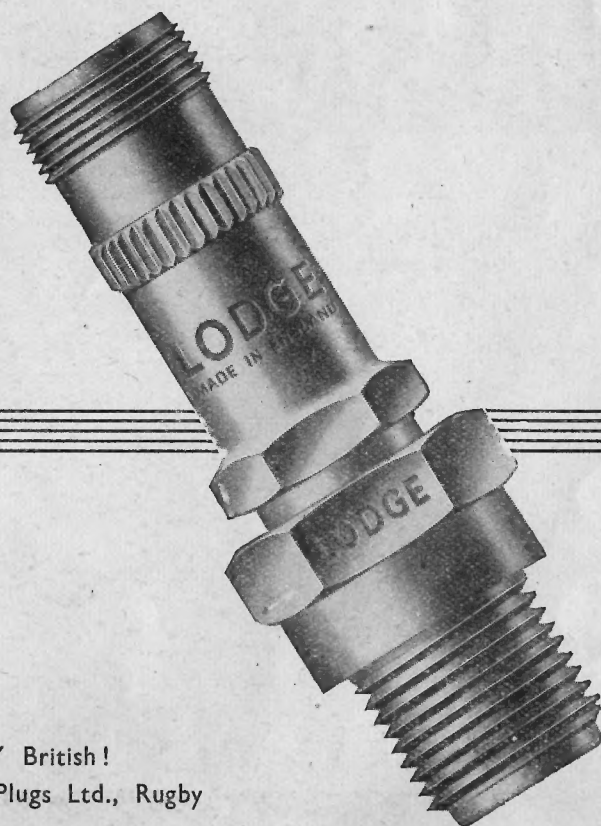
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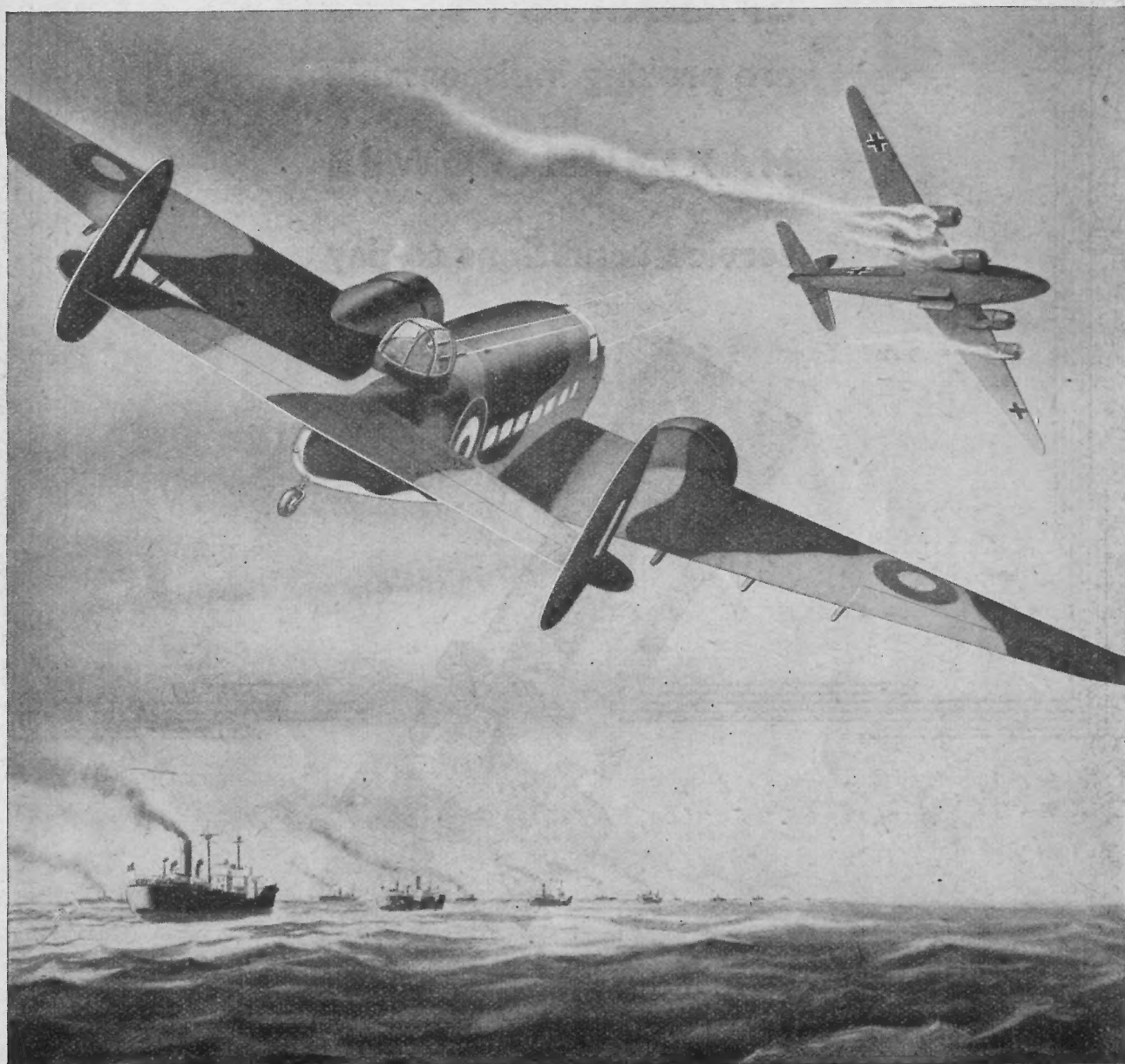
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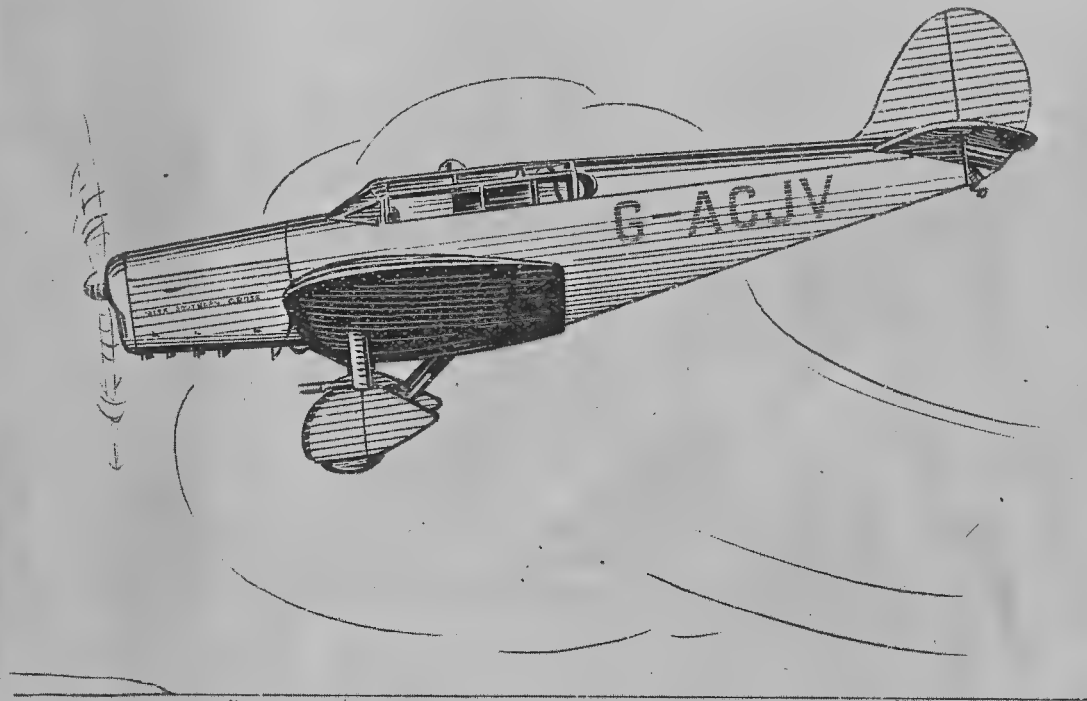
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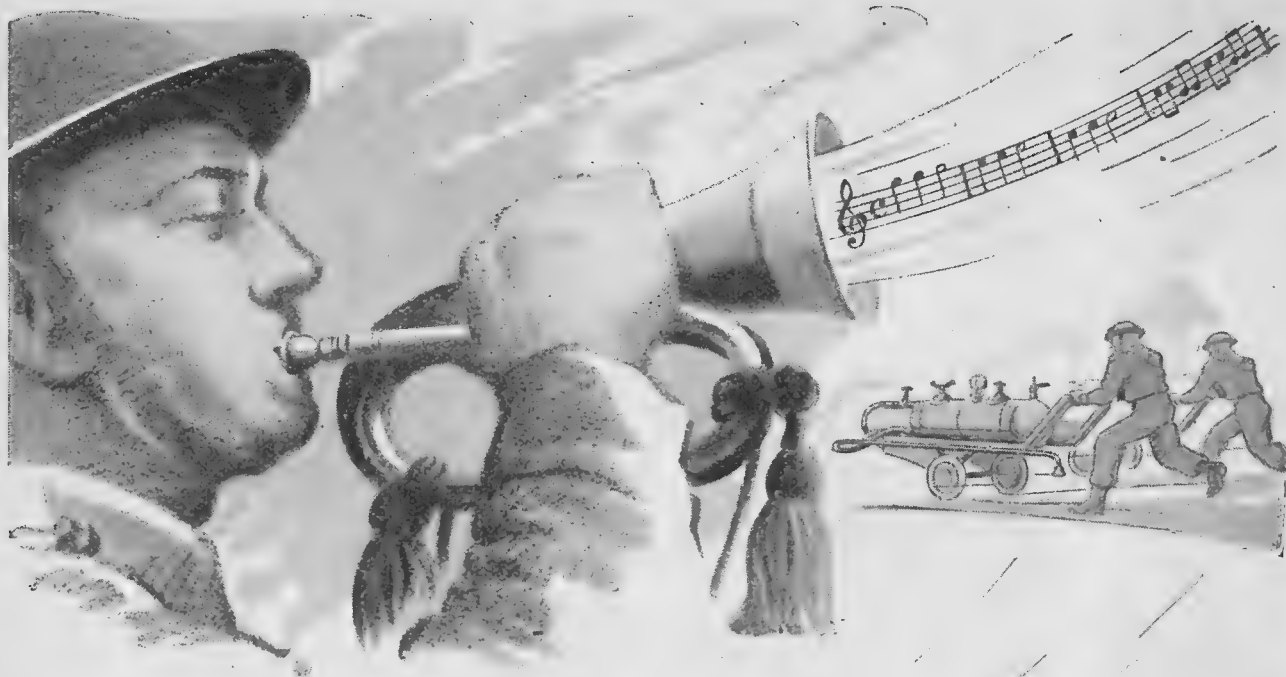
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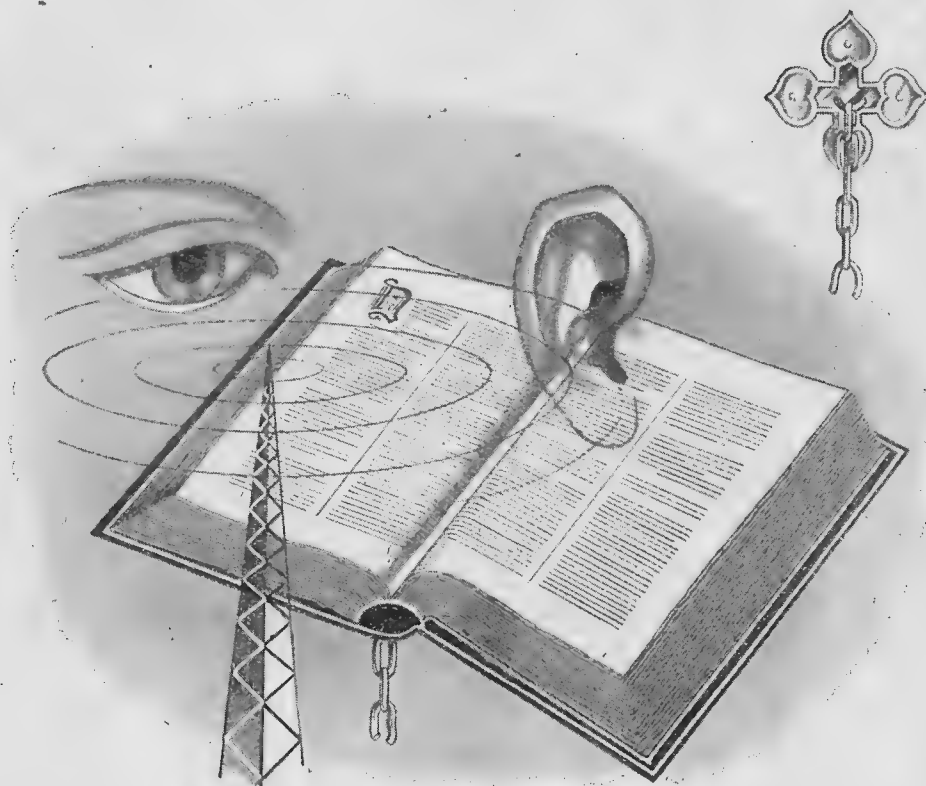
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"The Charter of Science"—British Association, 1941



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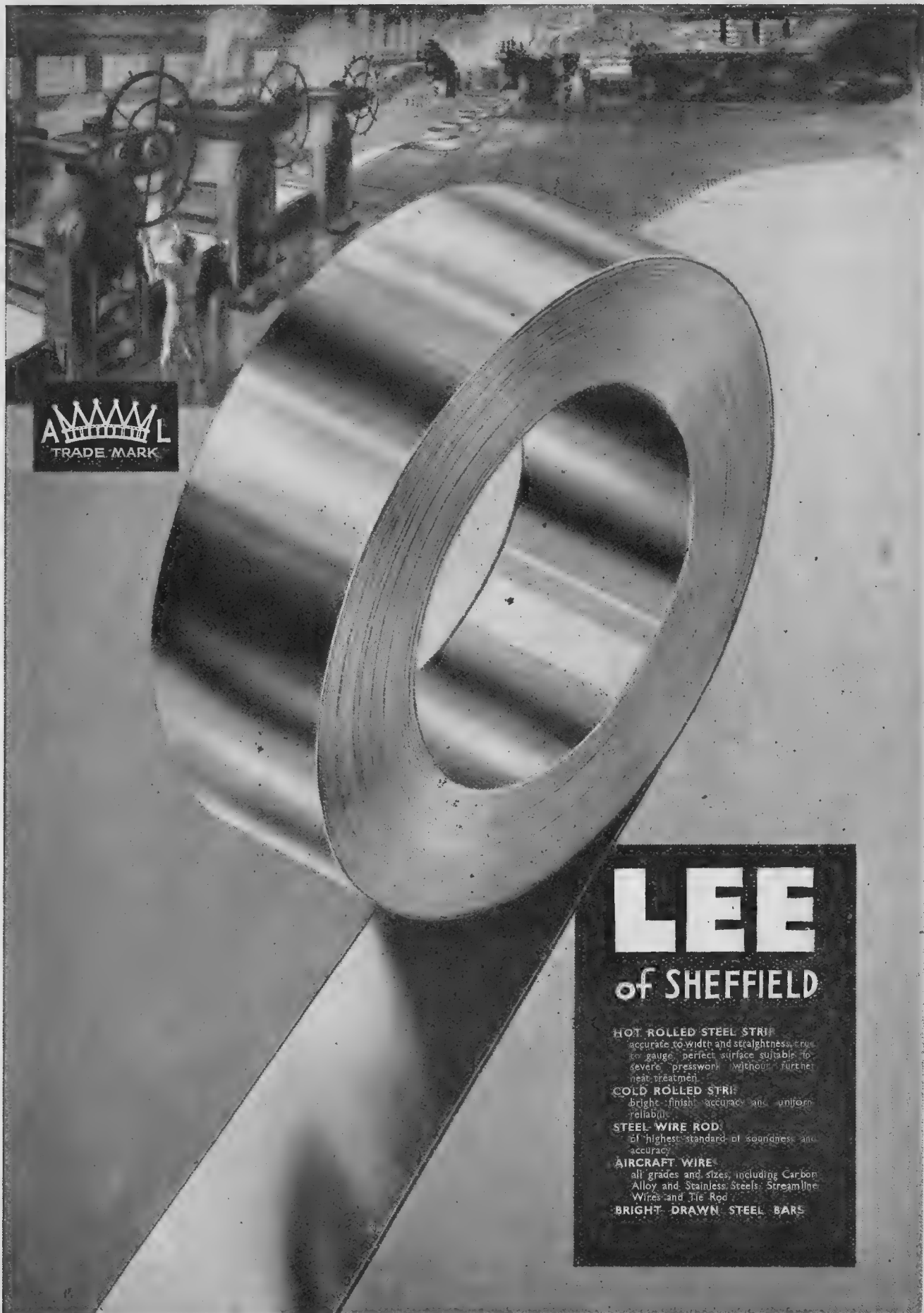
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MATTERS OF MOMENT

Priorities in Strategy

IN EVADING ENCIRCLEMENT the Russians have had to give more ground in the South. In a somewhat similar situation in Egypt, the Germans have drawn together into a slightly closer concentration. In Egypt the Germans have plenty of ground they can give if necessary in exchange for time. In the Don area, the Russians have little more they can afford to exchange for time. Yet he who dare assert that the Germans in Africa are more favourably situated than the Russians between Stalingrad and the Caucasus would ignore some of the essential circumstances.

A bold front is characteristic of German methods in both battle areas. In Russia, the Germans thrust forward across the Don steppes without waiting for the full reduction of Voronezh on the flank of the main offensive. They took the same risk a year ago when they advanced on Rostov and left an unsubdued Crimea on their flank. In Egypt the Germans, held on the El Alamein line, submitted to the contraction of their flanks and confidently thrust forward in the centre. The bold front gained them an enormous tract of land in Southern Russia; it gained them a few perilous miles in Egypt.

Selection of Objectives

Neither piece of boldness brought results of the decisive nature, such as rewarded similar confident strokes in Belgium, Holland and France. The tactics remain the same. They are applied with the added skill derived from two years' experience. The difference is that they are met with elasticity instead of despairing rigidity. Just as more pressure is needed to drive a hole through a rubber pad than through a plank, so greater weight in attack is now required to bore into armies which are mobile enough to give way. The new handicap on a tactical method of proved merit has an important reaction on strategical considerations. It compels the assailant to arrange his strategy in a series of priorities.

Whereas a year ago the Germans were attacking on the whole line of the Russian front from the Baltic to the Black Sea, they have had to restrict themselves this year to an offensive on a front about one-quarter of that length. Similarly, when the Afrika Korps came to a full stop outside El Alamein, the enemy had to consider, in the light of strategical necessities and probabilities, the question of raising the strength of his forces in Africa to the level at which the old system of penetration could be successfully exploited once more. This is not to say

that the Germans have yet begun to count the cost. The truth is rather that they are having to cast about for ways to find the means with which to pay the cost. That fact is doubtless as plain to the Russians as to the distant observer in Great Britain. It explains the blunt Russian insistence on a second front and it explains Russian counter-attacks at Voronezh.

The Price of Concentrations

It will explain more Russian counter-attacks on other parts of the front and it will account for lots of strange things that may be expected to happen when the Germans find themselves under pressure. Reinforcements for the Afrika Korps came partly from Crete. British Beaufighters caught some of them on the way. Some no doubt came from Italy. The British have put in an Air Commander at Malta whose fighters won the Battle of Britain; and the appointment is suggestive of an optimistic official view of the situation in Egypt. The Russians can be presumed to have a sound idea of where the German reinforcements for the Don offensive have come from. They make no announcement on the subject and this probably means that they intend to act on the information they have gained.

On the Western Front, the British have taken to daylight raiding and have used cloud-flying Lancasters and Stirlings outside the range of fighter escorts. The losses on these trips were relatively light. Can it mean too that the British have some idea of the risks the enemy is willing to take in defence for the sake of the offensives which are beginning to stretch him? At all events, the Germans have had some justification for the assurance which their manipulation of the internal lines has bred in them. By holding on to the great railway centres in Russia, they have been enabled to swing their weight to the points where it could be most effectively used. In Libya, by holding Tripoli and seizing the ports of Benghazi and Tobruk they won a large measure of freedom for their only sea crossing.

Now that they are within sight of full control of the Black Sea, other seas tend to invite their attention. Long ago, by the seizure of the Baltic States and the exploitation of Finnish patriotism, they had made the Baltic practically safe for the traffic of the superior race. At last the Russians have begun to challenge their security in those waters and the Germans have been forced to resort to convoys. A military victory at Leningrad would have settled that matter. Kronstadt could have



MIGHTY SHADOW.—A B-17E of the United States Army Air Forces landing on a new runway in the U.S.A.

been isolated and its naval activities would have been cut short as were those of the Polish Navy soon after Gdynia was taken. The Germans have shown no signs of taking the swift way. Instead of a campaign on land, they have fallen back on the more hazardous method of defeating the Russian Navy at sea.

Still farther North, the Germans are concerned both about the shipping which makes its way into Murmansk and Archangel, and about the possibility of a Russian assault across the Northern extremity of Finland into Norway. Their customary prescription for meeting this situation would be to push a powerful force into Northern Russia and occupy or isolate the ports they regard as danger-spots. Not yet have they attempted to repeat their costly and barren adventures in the Far North, though Summer is here and this is the only season for the movement of heavy transport. The clearing of the Baltic and the safeguarding of the Norwegian back door must wait for a more favourable season. They must take their turn after the seizure of Russia's southern lines and the expulsion of the British from the Near East.

Even in the Mediterranean, first things must come first. The Afrika Korps could be sufficiently supplied, by putting a blanket down on Malta, to allow it to take Tobruk and, through the luck of a single day's fighting, Mersa Matruh as well. Thereafter, Malta was of smaller immediate consequence. The great thing was to give Rommel the means to drive through to Alexandria and the Delta. Under that

threat the value of Malta to the British began to look little—rather a liability than an asset—and yet the British held on and reinforced it and sent Air Vice-Marshal K. R. Park to command its fighters. That must surely mean faith in their power to throw back the Afrika Korps and once more to make of Malta an advanced landing ground for air attacks on the Korps' supplies. Malta, and Cyprus too, invite invasion by the Germans. But the time is not yet.

Commitments in these days are carefully calculated before they are entered into. When they go wrong, as one has gone in Egypt, there can be no rapid switch to another, however good the internal lines may be. When they slow down and turn aside, as the one in Southern Russia may do, they cannot be withdrawn and given a lower priority. Nothing remains but to pour support into the failures and the semi-failures. If that support should happen to be needed for defence elsewhere, the whole splendid structure of offensive action might collapse and be forced to adjust itself, almost overnight, to meet the gruelling demands of defence.

The Germans can be left to create the right moment for an Allied offensive. They cannot resist the temptation to attack. None of their attacks has yet succeeded in destroying the armies they fear most; and every effort they make draws more heavily on their powers of resistance elsewhere. When the promised blow of the British and the Americans falls, the Germans may find that they have arranged their priorities in the wrong sequence; and there will be no time then to re-arrange them.

Variations on the Bombing Theme

BOMBING has worked its way back into favour in the past few weeks. Day bombing of submarine yards by Lancasters and Stirlings at small cost to themselves was recognised as precision bombing and free, therefore, from the charge of inaccuracy so often brought against night bombing; free equally from the taint of "area bombing" by which the heavy night raids put manufacturing districts

temporarily out of action. Day bombing by fighter-bombers in Egypt was also acknowledged as a preponderant element in British success. One correspondent declared that if the Eighth Army should win its battle the credit could "go largely to the fighter-bomber."

That tribute cannot yet be balanced by a corresponding testimonial from the Navy to the part of the Lancasters

and Stirlings in the Battle of the Atlantic, but in six months' time the state of affairs on the shipping routes should provide the epilogue to the story of Lübeck, Flensburg and Danzig. The United States Navy should have as good reason to thank the big bombers, as will the Royal Navy, and neither is likely to be unappreciative of those deadly low-level attacks. The strange coincidence is that the bombing, which has won approval at opposite ends of the war area, was low bombing. Stranger still is the comparatively low price that has had to be paid in doing it.

When all the old arguments relating to the difficulty of hitting close targets are admitted, there still remains a residue of surprise that light anti-aircraft fire has not proved more deadly against aeroplanes flying low. The Germans are not short of this class of A.A. defence. And hard though it might be to follow a Stirling at 400 ft. over Lübeck with an 88 mm. gun, there should be no trouble in keeping it in the sights of machine-guns. There has been plenty of evidence of the intensity of the A.A. fire directed against the Hurricanes and Kittyhawks in Egypt. One pilot, describing an attack on an enemy supply column recently, spoke of the "flak" which came up to meet him as being "thick as a bead curtain."

Armour is only part of the explanation of the bomber's relative immunity. The spraying of the A.A. gunners with fire from the bombers probably plays a large part in upsetting their aim. The fighter-bombers which come in low to place their bombs are able to spatter the gunners as they approach. While the Stirlings were making their runs over the target at Lübeck at a height of 400 ft., the gunners in their turrets were directing their fire at the guns on the ground. When the Stirlings and Lancasters were fitted with turrets, the intention was that these should afford defence against fighter attack. When the Hurricanes and Kittyhawks had guns set in their wings, the assumption was that they would be directed in the main against other aeroplanes.

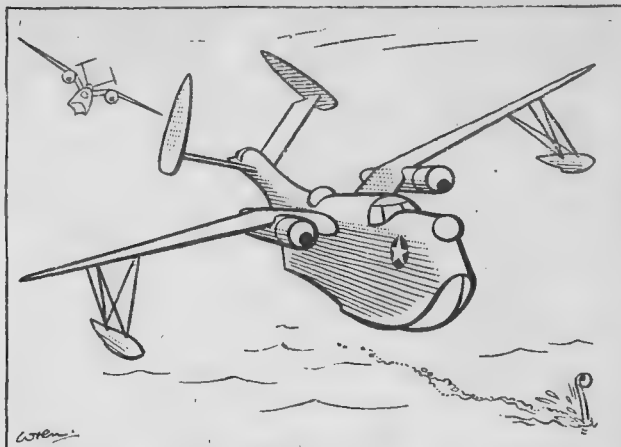
War's opportunities have turned the heaviest of the bombers into day raiders and some of the most manoeuvrable fighters into bombers and ground-strafters. Out of the heights, these fine aeroplanes have come down to defy the defences they were supposed to use height to evade. The moral must be that a really good fighter or bomber has redundant possibilities as well as redundant sources of strength.

To Command in Malta

AIR VICE-MARSHAL K. R. PARK, C.B., M.C., D.F.C., has been appointed to succeed Air Vice-Marshal H. P. Lloyd, C.B., C.B.E., M.C., D.F.C., as Air Officer Commanding the Royal Air Force, Mediterranean. Air Vice-Marshal Lloyd is to take up another important post shortly.

Air Vice-Marshal Park commanded No. 11 Group, Fighter

· ODDENTIFICATION—LXIX



"Yo heave ho!" roared the Mariner bold,
 "There's a pirate down below!
 Blow me down but I've got the swab cold
 And with the rare cargo in my hold
 I'll have him scuppered, scuttled and holed—
 Belay there, you so-and-so!"

Command, during the Battle of Britain and has just relinquished the post of Air Officer Commanding, R.A.F., Egypt. He is 50 years of age and transferred to the R.F.C. during the last War after serving with the New Zealand forces in Gallipoli. He is regarded as one of the greatest experts in the R.A.F. in the operational command of fighter aeroplanes. While in command of No. 11 Group he flew his own Hawker Hurricane over the beaches of Dunkirk during the evacuation of the B.E.F., and his was the last British fighter to patrol over Cherbourg when the last two ships were leaving that Harbour in 1940. He had a distinguished record in the last War, after which he served on overseas stations and was for a time Air Attaché in South America.

Air Vice-Marshal Lloyd is 48 years of age and rose from the ranks. He transferred from the Army in 1917 and was commissioned in the R.F.C., serving on co-operation work for the Army in France until the Armistice. He has served for 10 years in Egypt and before that had experience of operations in Waziristan, in Mohmand country, the Tirah and elsewhere. He is a man of terrific energy, and his courage and enthusiasm have been an inspiration to all who served under him, and to the people of Malta during his 14 months in command there.

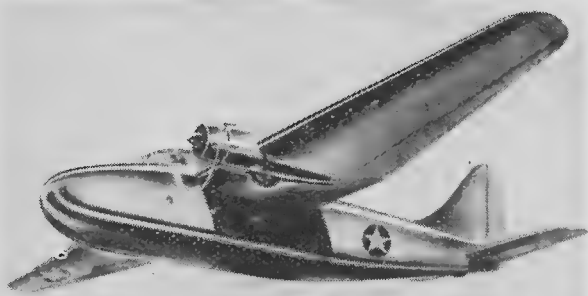
On handing over his command to Air Vice-Marshal Park, he issued a special order of the day in which he said that since the opening of hostilities Malta had been a base from which to hit the enemy's supply routes to North Africa and enemy losses by action from Malta had been very heavy. When the Germans transferred 400 aircraft to Sicily in December last, the attack on Malta was the most concentrated and sustained in the history of air warfare, but they destroyed and damaged so many enemy aeroplanes that it weakened the German effort in Africa and also helped out the Russians. Concluding, he said:—

" . . . In future, when people mention Malta you will say with pride, 'I was there.' Good luck to you all."



LATEST TYPE.—A Consolidated B-24D Liberator III in service with the R.A.F. The top gun turret has been moved forward and the motor cowlings are elliptical.

["Aeroplane", photograph]



WOODEN GIANT—A sketch of the projected Curtiss C-76, a wooden military transport to be built on mass-production lines by the Curtiss-Wright Corporation for the United States Army.

The U.S. Army Air Forces

FURTHER REORGANISATION of the United States Army Air Forces has taken place since the changes in structure which were announced in *THE AEROPLANE* of Oct. 10, 1941. Under that scheme, the newly constituted Army Air Forces embraced the old Army Air Corps, which thenceforth became responsible only for "procurement and training." The "combat" commands took their places alongside it as branches of the bigger organisation.

In the latest reorganisation, the old term "Army Air Corps" has disappeared altogether and a system somewhat resembling that of the Royal Air Force has been adopted to secure unified central control of administration, equipment and training and to leave combat commands a large measure of autonomy in operation, particularly when they are based in distant lands. The functions of old Army Air Corps have been scattered throughout the new organisation.

The Commanding General with his Advisory Council now have the Chief of the Air Staff and the Deputy Chief of the Air Staff in close association, as usual. Next come the departments of Personnel, Intelligence, Training, Supply, Plans and Air Inspection. These are served by the Directors of Military Requirements, of Technical Services, of Public Relations, Personnel, Finance and Medical Services, and the Judge Advocate. Eight Commands more immediately accessory to flying, such as Technical Training, Flying Training, Ground Command, Weather, Communications and Ferrying, form the next dependent section and below them come the offices of the flying squadrons and wings with Air Defence, Bombardment and Ground Support as ancillaries.

The eight Commands report direct to the Commanding General instead of through other Commands as under the old organisation. This enables the General to keep in closer touch with his various units.

Wing Commander B. Finucane

THE DEATH in action of Act. Wing Commander Brendan "Paddy" Finucane, D.S.O., D.F.C. and two Bars, was announced on July 17. He was leading his wing during the biggest mass attack yet carried out by fighter pilots on enemy targets in France when, as he flew low over a machine-gun post, a German gunner got in a lucky shot which penetrated the Spitfire's radiator. Wing Commander Finucane carried on to attack his target and then turned for home. He was too low to bale out and his motor was turning too slowly for him to gain height. He opened the sliding hood, took off his helmet and attempted to pancake on the sea, but the Spitfire sank immediately and the crash is believed to have knocked him unconscious. Though some of the squadron circled the sea for some time there was nothing to be seen but a widening streak of oil.

Wing Commander Finucane was officially credited with having shot down 32 enemy aeroplanes and was one of the best-known and most accomplished R.A.F. fighter pilots. He did most of his flying with No. 452 Squadron. Previously he had served with No. 65 Squadron and at the time of his death he was leading a Spitfire wing. On occasions this year he led a Scottish Auxiliary Squadron. He was born in Dublin on Oct. 16, 1920, and was educated at Christian Brother's School there. He entered the R.A.F. for training as a pilot in August, 1938, and was commissioned as an Acting Pilot Officer. His subsequent promotion was rapid, as befitted a pilot who stood in the great tradition both as air fighter and as leader of air fighters. He was the youngest Wing Commander in the Royal Air Force.

Flying Schools

I HAVE HEARD a lot lately of flying schools, here and overseas, at which the Instructors, who have had no war experience themselves, as they were too young for the last War, have a notion that a war pilot must be able to fly up to the standard of an exhibition pilot at a Hendon Display. They turn people down if their take-offs and landings are not perfect, and if their loops are not dead straight and if their turns are not mathematical curves.

At some schools I have heard that between 50 per cent. and 60 per cent. of fit, keen, intelligent, patriotic youngsters have been turned down because the Instructors do not know that straight shooting is more important than pretty flying. Several of the best killers in the last war, men who won V.C.s and D.S.O.s and things, were shocking pilots. They got up and down without smashing their machines, and that was about all. But they shot down enemy aircraft. One of our best pilots, a great leader of men and brigade commander, was colour-blind.

I believe that some of the people who have been thus turned down are being given another chance. But I know some who have not. And if those youngsters, able-bodied, alert and keen, are going to be stuck on dull ground jobs they will become centres of dissatisfaction and disgruntlement wherever they may be.—C. G. G.

The American Forces in Europe

THE COMMAND ARRANGEMENTS under which the United States Forces in Europe are being organised were announced on July 14 by Lieut.-General Eisenhower, Commander, the U.S. Forces in the European Theatre of Operations.

Ground troops in England are now commanded by Major-General M. W. Clark, formerly Chief of Staff to the Commanding General, Ground Forces in the U.S.A. The U.S. Army Air Forces are under the command of Major-General Carl Spaatz; the Services of Supply Organisation of the American Forces is commanded by Major-General J. C. H. Lee; the U.S. Army, Northern Ireland Forces, is commanded by Major-General Russell P. Hartle; and Major-General Charles H. Bonesteel retains command in Iceland.

In a statement made on July 14, the Theatre Commander paid a tribute to the cordial welcome extended to the American Forces in Great Britain and the co-operation and assistance extended to them by the British military Services.

A Thankless Job

COLONEL GALLAND, the present Inspector of the fighter formations of the Luftwaffe, was formerly the Commodore of the Schlager Jagdgeschwader, which, after the Richthofen Geschwader, is the second crack fighter group stationed in Northern France. Galland was succeeded by Major Schoepfle, who is now trying to keep the Royal Air Force out of the Low Countries and Northern France by day. One of his Wing Commanders is Captain Müncheberg, who, until recently, was in charge of a fighter wing in Libya and was decorated by Mussolini with a high Italian Order for his work during the second offensive against Malta. Both fighter groups fly Fw 190s.



Act. Wing Commander B. Finucane, D.S.O., D.F.C. and Two Bars.



WEIGHT BY DAY.—Short Stirlings of Bomber Command. Stirlings have been taking advantage of cloud cover to raid, unescorted, targets in Germany during daylight. Last week they dropped bombs on the Baltic ports of Lubeck and Flensburg.

A Chance to Teach the Troops

DURING the past few months the R.A.F. has been steadily increasing the number of its gliding school instructors. When the schools were started all available pilots with gliding experience were gathered together and the remaining vacancies were filled by keen volunteers who were attracted as much by the novelty of the work as by its urgency and importance.

If anything, glider instructors have to be even more skilful than ordinary flying instructors. There is an art in keeping station with the tug, in holding formation when group flying is in progress, and in maintaining position when the gliders cast off and land together. Certainly no aircraft has to be brought in with greater precision, and accomplished "power pilots" have often improved their flying by a course on gliders.

So great is the Army's need of glider pilots now that still more instructors are wanted by the R.A.F. for its glider schools. Any R.A.F. pilots, but preferably those with instructing experience, may put in for the work. The instructional gliders used at the schools have little in common with the types used by the gliding clubs. They are, in effect, small air liners, and R.A.F. pilots planning to take up a career in commercial flying after the War might find a spell of duty at a glider school a distinct advantage. There is a saying that pilots trained in gliding are the best pilots, and no one has yet denied it. The R.A.F.'s glider instructors have the double advantage of flying both gliders and their power-driven tugs, and thus of advancing their skill with both types simultaneously.

An American Sportsman

WE REGRET to announce the death of James Blackstone Taylor, Junr., a well-known American pilot who had many friends in this country. Best known for his work for private and sporting flying in the United States and as a test pilot, he had also served with the U.S. Naval Air Service from 1917 and was killed while flying a naval aeroplane on May 25. The cause of the accident and the type of aeroplane are not yet known, but according to preliminary reports from the U.S.A. the motor was heard to cut out at about 500 ft. and he spun into a swamp near Woodbury, New Jersey.

"Jimmy" Taylor joined the U.S. Naval Air Service when he left Princeton University and had been flying ever since. The number of types he had flown must have totalled some hundreds. He served at training stations during the last War and after the Armistice became a test pilot at the Bureau of Aeronautics at Washington. Although attached to the U.S. Navy throughout his career he had much to do with civil flying, both as test pilot and aviation consultant, and was prominent in promoting sporting flying throughout America.

He was one of the founders of the Aviation Country Clubs for sportsmen pilots in the United States, and, in 1927, of Air Associates, Inc., an organisation which offered repair and other services to pilots. He was Vice-President of the latter until America's entry into the War, when he returned to the Navy for full-time duties.

James B. Taylor was a regular contributor to "The Sportsman Pilot," one of the best-produced American technical papers which is devoted exclusively to private flying. He was that paper's sportsman test pilot and his accounts of each new

American light aeroplane, or aeroplane suitable for civil flying as distinct from commercial flying, were one of the features of the journal.

He was 44 years of age and his rank with the U.S. Navy was that of Lieut.-Commander.

The Bug Squadron

A NEW RUMANIAN FIGHTER SQUADRON which is to operate in Russia has been given the name "Bug." The squadron was formed at Tiraspol, and was addressed at the inaugural ceremony by Irene Burnaya, the Rumanian airwoman, who is the commandant of the flying school. Irene appealed to the airmen to sacrifice themselves, if necessary, for the great task and "to cultivate German-Rumanian comradeship in arms." The ceremony was attended by the German commander of the German-Rumanian Air Corps, General of Aviators Speidel.

A Pioneer Passes

ROGER MORIN, a famous Blériot pilot of pioneer days, has died at Dieulefit (Drome).

AIRIDENTITIES—XI



Air Chief Marshal Sir Arthur Tedder, C.B.,
Air Officer Commanding-in-Chief, Middle East.

The 150th Week of

THE WAR IN THE AIR



THE GUN RUNNER.—A Junkers Ju 52/3m bringing supplies to Rommel by moonlight.

CLOUDED SKIES in July have brought with them for a second week in succession new tactics for bombing Germany. Avro Lancasters and Short Stirlings have made several long raids into Germany by day under cloud cover and the casualties have been remarkably light.

Cloud cover gives all the protection of night bombing—so long as it extends to the target—and yet permits precise bombing under its base. The increased danger to the attacker, compared with night bombing, comes only over the target itself, but that is offset by the gain in accuracy which is made possible. Our new four-motor bombers are ideal for the job, because they can carry a really useful load, they can defend themselves when intercepted, and have the speed to do the job before the weather changes.

We, too, in this country must expect similar visitations from the enemy, although the Luftwaffe, with charac-

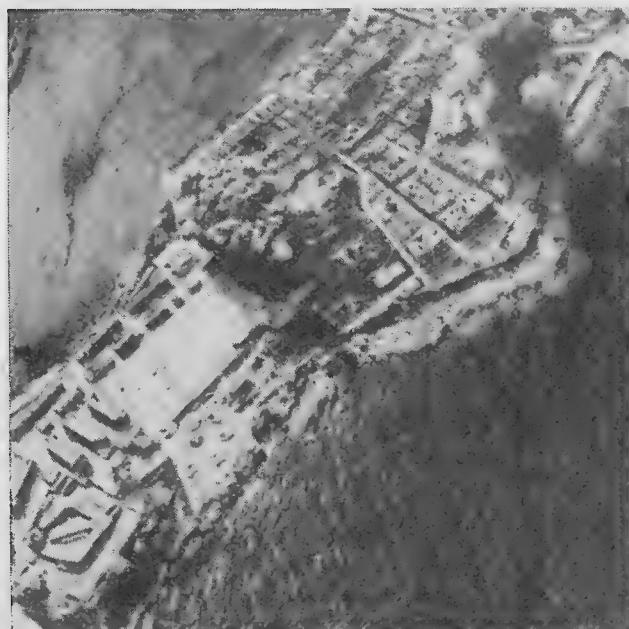
teristic singleness of purpose, is now largely concentrated against Russia. Little air news comes through from that front—at least, in detail—although the Russians claim to have destroyed 3,000 German aeroplanes during the past two months.

The German advance across the Don can be achieved only with the aid of air superiority, chiefly in fighters. There is some evidence to support the view that the Red Air Fleet, gallantly as it has fought and is fighting, is beginning to feel the heavy losses it has inevitably suffered. Supplies of aircraft from Great Britain and the U.S.A. are being fully maintained. In fact, as Mr. Oliver Lyttelton, Minister of Production, said last week, 111 British aeroplanes have been delivered to Russia for every 100 promised.

In Africa the great work by the Royal Air Force, Dominion Air Forces, and aircraft of the Naval Air Service continues. American aeroplanes are adding their weight to the effort, too, and Liberators of the U.S. Army Air Forces have helped our Wellingtons to batter Rommel's supply ports. Obviously, large reinforcements of the U.S. Army Air Forces are on the way, for Maj.-Gen. Lewis H. Brereton has been appointed to command them.

The course which the War will take in the future depends on what happens in Russia during the next few weeks. If our Allies should be pushed back much farther, Germany may be able to spare men and aircraft to send to Africa in numbers sufficient to force the Eighth Army back on Suez. Obviously, the enemy's ambition this Summer is to cut off Russia from her supplies and particularly from her oil. Germany is not short of oil, but Russia would be if she were deprived of oil from both the Caucasian and Iranian wells.

And so the Second Front gains in significance and is demanded in many quarters as a possible relief for the situation. Looked at dispassionately, any relief from a Second Front in Europe seems unlikely. An invasion of Norway would need much shipping and could not be supported adequately by the air cover which is essential to success. Invasion of France would require less shipping and could be given the air support, but would be met by at least 26 German divisions and would be unlikely to divert immediately a single man or aeroplane from Russia.



THE UNSINKABLE AIRCRAFT CARRIER.—An air photograph taken during an attack on Malta by aeroplanes of the Axis air forces.

Furthermore, it would mean weakening our air strength and that hitting power, which is being laboriously built up to use with overwhelming effect at the earliest moment that success can be assured.

Logically, our best policy at present would be to hit Germany as hard as possible from the air, while continuing our supplies of aircraft and other materials to Russia. Yet there may never again be so favourable an opportunity for striking with all arms at Germany as now, when she is inextricably engaged with Russia.

The Battle of the Ridges

B RITISH FORTUNES IN EGYPT were again improved last week. After their five-mile advance to Tel El Aisa in the previous week, the Eighth Army took Ruweisat Ridge, a promontory running East and West some 10 to 12 miles from the coast, which commanded the central sector of the Egyptian battlefield. The ridge was captured on July 15 by British, New Zealand and Indian troops, and the enemy's most strenuous efforts to recapture it failed.

Two days later, Australian troops thrust southwards from the Northern sector and captured two more ridges, but in the face of two strong counter-attacks they were obliged to give up the second. At the week-end they were reported to have consolidated their positions and to be holding the enemy's further counter-attacks. During most of the week there was little activity on the Southern sector, but at the week-end came news that here, too, the Eighth Army had made progress.

Once again, the Imperial and American Air Forces held almost undisputed sway over the battlefield. Raids by fighter-bombers, light bombers and fighters reached a new high record for frequency and weight, and there were more daylight raids by heavy bombers.

As their experience grows, the pilots of fighter-bombers appear to improve their skill at bomb aiming. On July 13 they knocked out five enemy tanks with direct hits, and on the following day destroyed six. According to trustworthy information, no British tank in the desert has yet been hit and destroyed by a Stuka bomb. In an attack on a convoy of 15 vehicles, including a tank, all but one transport were wiped out. On another occasion, fighter-bombers hit and completely destroyed three large trailers used by the Germans as mobile headquarters. The accuracy of the bombing, both by Bostons and by fighter-bombers in close support of the Army, won the unstinted praise of troops in the forward positions.

The bombs used by the fighter-bombers in the desert, unlike those used by the Hurricanes in their low-flying attacks over Northern France, have instantaneous fuses. They are aimed with the aid of the standard gunsight and are dropped from heights of about 500 to 1,000 ft. Pilots often use their machine-guns during the dive approach, causing anti-aircraft gun crews defending the target to desert their guns and seek safety in rapid dispersal.



OVER THE BLACK SEA.—Russian MDR5 flying-boats on their way to attack enemy shipping. The top gun turret is hand operated.

In addition to their work in the main battle area, the Imperial and American Air Forces made heavy raids on enemy aerodromes in North Africa. They also attacked Tobruk on the nights of July 12-13, 14-15, 17-18 and 18-19, and Benghazi on the night of July 12-13 and on the evening of July 15. The evening raid on Benghazi was made by bombers of the U.S. Army Air Forces, which also took part in the raid on Tobruk on July 17-18. In the first 36 days the Americans were in Egypt they undertook 21 tactical missions. They lost three bombers and their crews, but shot down five Axis aeroplanes.

Aeroplanes of the Fleet Air Arm had a share in North African air operations. On the night of July 11-12, a single bomber attacked an enemy ammunition ship off Mersa Matruh and brought it to a standstill with a direct hit. It then called up naval surface craft by radio and the ship was destroyed by gunfire. Other naval aeroplanes destroyed an ammunition dump, or a collection of ammunition lorries, to the West of the battle area, and towards the end of the week they set fire to large quantities of oil on the quayside at Mersa Matruh.

Fighters of the Royal Air Force made a low-level attack on a small naval craft in the Mediterranean on the night of July 13-14, scoring many hits with cannon and machine-gun fire. This attack was probably the work of Bristol Beau-fighters.

For his main bombing effort in the battle zone, the enemy still relied largely upon the Junkers Ju 87 dive bomber. Messerschmitt Me 109s continued to provide the bulk of fighter cover, but increased use was made of Italian fighters, principally Fiat G.50s, Macchi C.202s and Fiat C.R. 42 biplanes. Of the 23 fighters shot down in the desert, 12 were Me 109s, six C.R. 42s and four C.202s. Among the enemy's other air losses was a Fieseler Storch, a type used by Rommel and other high Axis officers for their air journeys. The Storch



LIGHT CARGO.—A coastal convoy of small ships moving from one British port to another under an umbrella of kite balloons. These are special small balloons which ward off dive bombing and mast-height attacks, and have already brought down a number of enemy aeroplanes. Naval drifters take them from depots at the big ports in Britain to ships that ask for them, and collect them from incoming ships.



SAND TRAP.—An air intake filter fitted to the motor of a German aeroplane operating in the Western Desert.

was shot down just as it became airborne. Five Ju 87s and one Ju 88 were also destroyed in North Africa.

Raids on Malta diminished in frequency and intensity, judged by the scale of raiding in recent months, but the defences accounted for 13 fighters and five bombers. An Air Ministry News Service bulletin issued on July 13 stated that in the first 11 days of July, the enemy lost a total of 83 fighters and bombers in attacks on Malta. They were accounted for by R.A.F. fighters and anti-aircraft gunners. The R.A.F. lost 21 fighters, but nine of the pilots were saved.

The Threat to Rostov

For the Russians, the week brought heavy reverses. On the Southern front, the fall of Lisichansk was quickly followed by the capture of Millerovo and Voroshilovgrad. At the week-end the Germans claimed to have reached the lower Don, East of Rostov, and an unconfirmed report from Vichy stated that the enemy was thrusting Eastwards along the coast of the Sea of Azov and had approached to within 11 miles of Rostov-on-Don.

Moscow reported a furious battle on the Don "elbow," South of Millerovo, in the direction of Kamensk, where the Russians' defences were stated to be stiffening. At Voronezh itself, which the Germans had prematurely claimed to have captured, the Russians held the initiative and continued to improve their position. At the Southern end of this sector they were fighting on the West bank of the Don after having thrown the enemy back across the river.

Fighting also occurred at other points along the Eastern Front. In the Briansk area, the Germans were forced to abandon several villages they had occupied when they drove a wedge into the Russian positions. South-west of Rzhev the enemy suffered heavy losses in men and materials, and farther North, the Russians made a breach in the German positions by a powerful attack South of Lake Ilmen.

Both air forces were engaged in large-scale operations, but few details of their work were given. So broad is the scene of battle that, on most occasions, the bombers met with little opposition and nearly always reached their targets. Aerodromes were frequent targets, and most of the air losses reported were doubtless caused by this form of attack. A Russian supplementary communiqué stated that four enemy aerodromes were raided in one day by pilots of the Red Air Fleet, who so surprised the enemy that they were able to destroy 25 aircraft and one hangar on two of the aerodromes, about 70 aircraft on the third and 18 on the fourth. The Germans claimed the capture of a Russian aerodrome and 50 aeroplanes by a mobile column.

One destroyer, five gunboats, nine patrol vessels and an

armed transport were hit by units of the Baltic Fleet Air Arm in raids, lasting three days, on a concentration of enemy naval craft in the Gulf of Finland. A German announcement alleged that Soviet bombers raided a place in East Prussia on the night of July 18-19.

The air losses as reported by the Russians for the week July 12-18 were:—German 211, Russian 137. The Russians also stated during the week that 3,000 German aeroplanes had been destroyed during the period May 15 to July 15. The Russian losses in the same period were put at 1,354.

Ground Regained in China

Chinese troops, landed from boats on July 11, recaptured Futou Island at the mouth of the Min River, near Foochow, in Fukien Province. Others continued to advance in three columns on Linchwan, 50 miles South-east of Nanchang, the capital of Kiangsi Province, and reached a point only two miles from that town. Among the places taken was Kinki, to the South-east of Linchwan. Tsingtien, in Eastern Chekiang, was also recaptured. In Eastern Kiangsi, Tsaotou, South of Shangyao, was re-occupied.

The Chinese announced the loss of Wenchow on July 11 and of Juian on July 12, and the recapture of both places on July 18.

A statement from the Minister of Communications at Chungking stated that the air services linking China with the outside world had a capacity almost as great as that of the Burma Road, and were bringing in much-needed supplies.

Royal Air Force bombers operating from India raided Kalewa on July 12 and 15, Kalembo and Kyigon, on the Myittka River on July 15, and objectives at Akyab on July 16.

Air activity in the South-west Pacific was limited largely to reconnaissance, but an Allied air unit attacked Japanese objectives in the small town of Kalabahi, on Alor Island, off the North-east coast of Timor, for the first time. Salamaua was raided again on July 14.

In operations against the Japanese in the Aleutian Islands, U.S. bombers recently dropped 56 bombs on enemy "installations" at Kiska. The Japanese now occupy Attu and Agattu islands as well as Kiska.

More Daytime Bombs on Germany

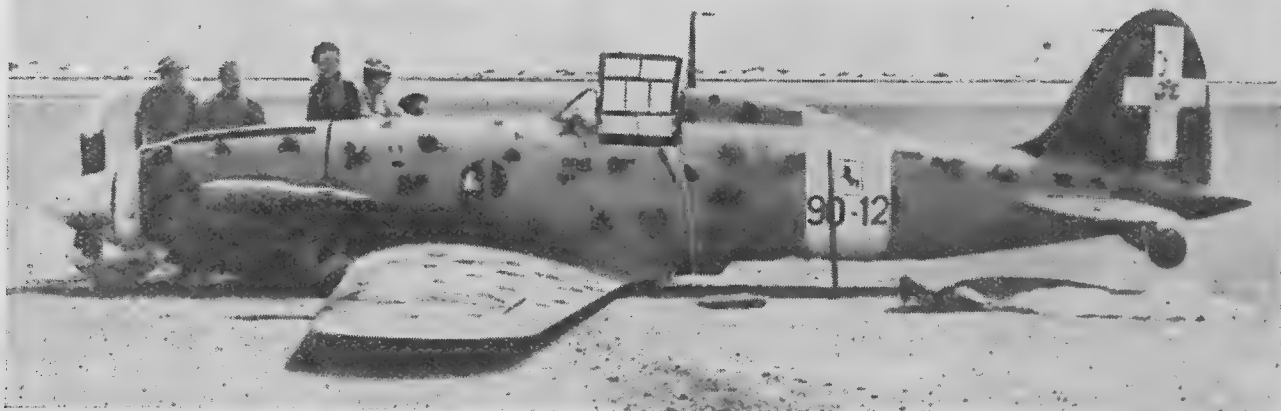
Making use of the clouds which curtailed their night operations, bombers of the Royal Air Force from home bases last week made a series of daylight raids on important German targets. Stirlings attacked shipyards at Lübeck and Flensburg, in the Baltic, and Lancasters and other bombers raided the Ruhr, North-west Germany, and points in Holland. Only once were the bombers able to launch a night attack.

Escorted Bostons paid two visits to the Continent. In the first, they raided a German aerodrome near Abbeville, and in the second made railway yards at Boulogne their objective.

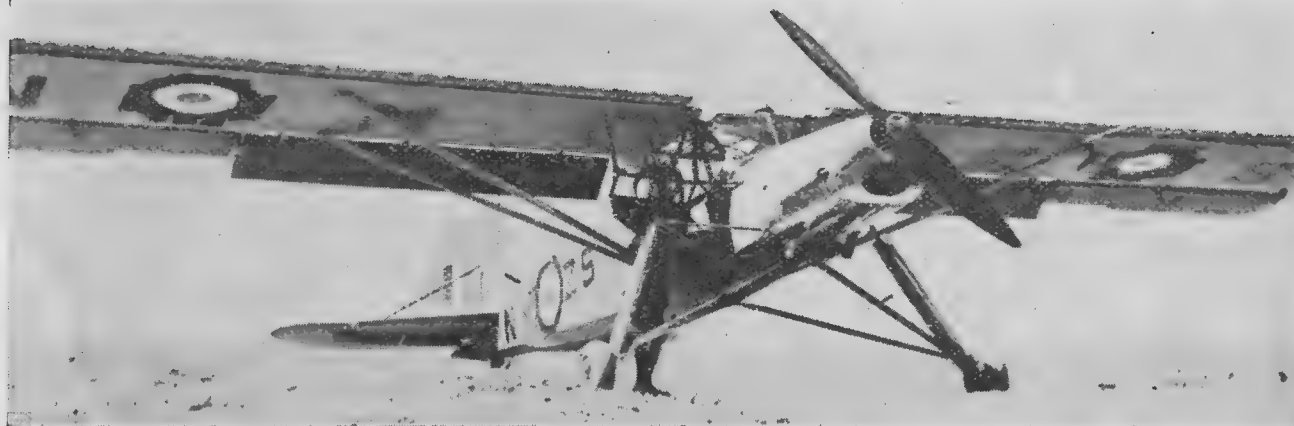
Spitfires engaged in sweeps over the Channel area set fire to three small ships off Ostend, and the following day sank a small enemy coaster off the Dutch coast. A four-hour battle was fought over the Channel between Focke-Wulf Fw 190s and Supermarine Spitfires when the Focke-Wulfs unsuccessfully tried to prevent launches of the Air-Sea Rescue Service from picking up two British pilots who had been forced down into the water. In the combat, one Fw 190 was shot down by gunfire from the launches, and two more by R.A.F. fighters. Two R.A.F. fighters were lost.

Enemy raids on Great Britain were again light and confined chiefly to coastal areas. Inland, some bombs were dropped at one point in the Midlands and others in the Greater London area.

A summary of the operations of the Fighter and Bomber Commands of the Royal Air Force appears on page 95.



DOWN IN THE DUMPS.—A Macchi C.202 single-seat fighter (one DB 601 motor) shot down at El Alamein by a South African Brigade, which took the Italian pilot prisoner.



STALKY AND (NEW) CO.—A Fieseler Storch captured in the Desert and used by the British for reconnaissance flights.

Diary of the Week

Offensive Operations of the Fighter and Bomber Commands of the R.A.F. From July 12 to 18, 1942

Sunday, July 12

DAY .. Escorted Bostons attacked an enemy aerodrome near Abbeville. Ju 88 destroyed over the English Channel by two Spitfires of a Czech squadron.

Monday, July 13

DAY .. Escorted Bostons attacked railway yards at Boulogne. Other fighter squadrons made sweeps over the Abbeville area. Three R.A.F. fighters lost.

NIGHT .. Main targets: Industrial objectives in the Ruhr. Five R.A.F. bombers lost. Five million leaflets dropped by aeroplanes of Bomber Command on Paris, in Vichy France and the industrial North of France in connection with the next day's national celebrations.

Tuesday, July 14

DAY .. Railways and aerodromes attacked during offensive fighter patrols over Northern France. During evening patrol, fighters set fire to three small enemy ships off Ostend. One fighter lost.

Wednesday, July 15

DAY .. German camps, gunposts, troops and other targets on the coast of occupied France between Dieppe and Etaples attacked with cannon and machine-gun fire during a series of offensive fighter patrols. Sweeps were also made over the Cherbourg and Boulogne areas. In the evening, fighters sank small enemy

coaster off the Dutch coast. One enemy fighter destroyed. Four R.A.F. fighters lost. Three enemy fighters destroyed (one by gunfire from launches) during four-hour battle between Spitfires and Fw 190s which unsuccessfully tried to prevent the Air-Sea Rescue Service from picking up two R.A.F. pilots in the Channel. Two R.A.F. fighters and one launch lost.

Thursday, July 16

DAY .. Aeroplanes of Bomber Command, flying singly, attacked objectives in the Ruhr, North-west Germany and in Holland. Fighter patrols attacked railway yards and other objectives on the French coast. One bomber lost. Submarine yards at Lübeck and shipyards at Flensburg were attacked by Short Stirlings in the evening. Two bombers lost.

Friday, July 17

DAY .. Single bombers raided objectives in the Ruhr and North-west Germany. One enemy bomber destroyed by fighters off the South Coast. Fw 190 destroyed by naval launch.

Saturday, July 18

DAY .. Lancasters raided objectives in the Ruhr. One Me 109 shot down by Lancaster off Dutch coast. One Fw 190 shot down over the Channel. One Do 217 shot down off the East coast of England. Fighters and Hurricane fighter-bombers attacked small German convoy off the Cherbourg Peninsula. Supply ship left listing and on fire. Two escorting ships damaged. One fighter lost.

GERMAN, ITALIAN AND BRITISH LOSSES—JULY 12-18, 1942.

Date	Axis (N. Europe)		Axis (Near East)		R.A.F. (N. Europe)		R.A.F. (Near East)	
	Machines	Personnel	Machines	Personnel	Machines	Personnel	Machines	Personnel
12-7-42	1	4	6	7	—	—	2	2
13-7-42	—	—	11	17	8	35	—	—
14-7-42	—	—	8	14	1	1	9	13
15-7-42	4	4	8	8	6	4	5	7
16-7-42	—	—	5	10	3	20	9	15
17-7-42	2	5	5	16	2	9	7	10
18-7-42	3	7	—	—	1	1	3	2
Totals	10	20	48	72	21	70	35	49*

* Excludes 6 pilots saved.

TOTAL LOSSES IN THE AIR WAR* (To dawn, July 19).

	Axis Air Forces	Imperial Air Forces
Machines destroyed in combat or by A.A. gunfire .. .	9,236	5,763
Personnel .. .	24,581	16,687

* Excluding Russia and the Far East, and U.S. losses in the Far East and other theatres.

CIVILIAN AIR RAID CASUALTIES

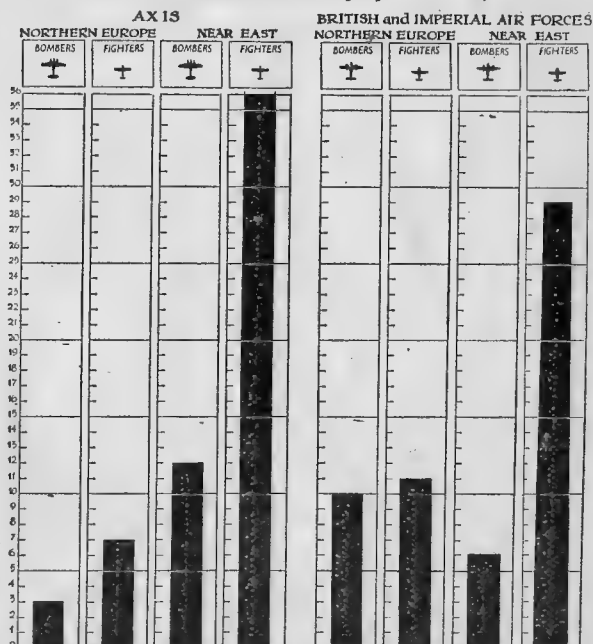
Enemy air raids on the United Kingdom during June caused the deaths of 300 civilians and serious injury to a further 537. These figures bring the number of civilians killed in air raids since September, 1940, to 43,118, and the number injured to 55,006.

ADDITIONAL ENEMY LOSSES.

Two Junkers Ju 87 dive bombers were destroyed by anti-aircraft gunfire in the battle area of North Africa on July 11. On the same day another Messerschmitt Me 109 and a Ju 87 were shot down by fighters.

Three Me 109s were destroyed over Malta on July 11 in addition to those already announced.

THE WEEK'S LOSSES— July 12 to 18, 1942



THE WEEK'S LOSSES AT A GLANCE.—Comparative losses in the Air War for the week July 12 to 18, 1942, inclusive. The chart does not include aeroplanes destroyed in Russia and the Far East or those destroyed on the ground. Nor does it include U.S. Army Air Forces losses in Europe and the Near East. The figures are: Northern Europe: Axis (daylight offensive) 3 bombers and 4 fighters; (defence by day) 3 fighters; British: (daylight offensive) 3 bombers and 9 fighters; (night offensive) 7 bombers; (defence by day) 2 fighters. The losses in the Near East were: Axis, 12 bombers and 36 fighters; British, 6 bombers and 29 fighters. Estimated personnel losses were: Northern Europe: Axis, 20; British, 70; Near East: Axis, 72; British, 49.

NEWS OF THE WEEK

AIR VICE-MARSHAL K. R. PARK, C.B., M.C., D.F.C., has been appointed to command the R.A.F., Mediterranean, in succession to Air Vice-Marshal H. P. Lloyd, C.B., C.B.E., M.C., D.F.C. This appointment was announced by the Air Ministry on July 18.

Major-General Lewis H. Brereton, who commanded the U.S. Air Forces in the Philippines, was stated on July 18 to have arrived in the Near East to command the U.S. Army Air Forces there. The U.S. Army Air Forces are now taking a greater part in air operations with the R.A.F. The Americans depend entirely on the R.A.F. for maintenance, at present, and will probably continue to do so for some time.

For every 100 aeroplanes promised to Russia 111 have been delivered. Tanks have been shipped at the rate of 50 a week and by the end of May 11 per cent. more aeroplanes had been shipped than had been promised for the period ending on June 30. This statement was made by Mr. Oliver Lyttelton, Minister of Production, in a speech at Aldershot on July 18.

Voroshilovgrad was evacuated by the Russians on July 19.

For the third day in succession targets in Germany were bombed by the R.A.F. in daylight when Avro Lancasters attacked targets in the Ruhr on July 18. They returned without loss.

Canada was stated on July 16 to be producing 400 aeroplanes a month.

Bombs were dropped in the Greater London area on July 17 during the first daylight raid on London since March 16 last. The last time bombs were dropped in London during daylight was on March 6, 1941.

Marshal Rommel resumed his attack on Allied positions in the Northern sector of the Egyptian battlefield on the night of July 14.

On July 14 the title of the Free French movement was changed, in full agreement with the British Government, to "Fighting France" (La France Combattante).

A statement issued from Malta on the night of July 14 stated that in a raid that morning the enemy lost his 100th aeroplane over Malta since the beginning of July.

The 30 millionth Airgraph letter was stated on July 15 to have been handled

by women sorters at the G.P.O., London.

Their Majesties the King and Queen, during a tour of North Wales on July 15, visited an aircraft factory where they saw girls assembling airframes and helping to fit motors. Later they watched two bombers, which had been completed only an hour or two before, being test flown.

Details of the operations in the Aleutian Islands were given on July 17 by the U.S. Navy Department. The islands occupied by the enemy are all undefended and consist of Kiska, 585 miles, and Attu, 769 miles, West of Dutch Harbour and Agattu, between Kiska and Attu. The force which attacked the Aleutians on June 3 consisted of two small aircraft-carriers, two seaplane tenders, several cruisers and destroyers and four to six transports. A number of American aircraft were lost during the attacks and at least seven Japanese aeroplanes were destroyed. There has been no material change in the situation since July 11 and no attacks have been made on any U.S. military installations in Alaska or the Aleutians since June 4.

The full story of the U.S. naval battle of Midway Island, early in June, was told by the U.S. Naval authorities on July 14. The battle was unique in that the opposing ships were never in sight of one another and all the damage done to ships on both sides was from the air or by submarines. The first attacks in the morning were made by U.S. Army Air Forces Flying Fortresses and on the night of June 3 Naval Consolidated Catalina flying-boats did heavy damage to one Japanese fleet advancing from the West. On June 4 Army torpedo-bombers, Flying Fortresses, Marine torpedo aeroplanes and dive bombers were in action against a Japanese fleet advancing from the North.

In an attack on Midway Island the Japanese lost 40 aeroplanes destroyed by U.S. fighters and anti-aircraft guns. An American flight of 15 torpedo-bombers, sent in pursuit of the retiring Japanese fleet, failed to return. The torpedo aeroplanes were followed by a large force of bombers which completed their work by setting on fire three aircraft carriers.

Of 18 Japanese bombers which attacked the U.S. aircraft carrier Yorktown, 14 were shot down after scoring three hits on the Yorktown. Twelve to 15 Japanese torpedo aero-

planes followed up the attack and were also shot down, but the Yorktown was put out of action. While this attack was going on U.S. aeroplanes from the Yorktown repeatedly hit the Japanese aircraft carrier Hiryu, which sank the next day, and heavily damaged two battleships, one destroyer and three other Japanese aircraft carriers which sank that day. The U.S. aeroplanes pursued the Japanese fleet for two days.

A new aero-engine research laboratory for the National Advisory Committee for Aeronautics is now at work at Cleveland. The first units of the laboratory, which is to be the largest in the World, are operating one year ahead of schedule. The laboratory includes a wind tunnel for testing motors of up to 4,000 h.p., a test stand for airscrews of 22 ft. in diameter, a fuel and lubricants test building, a flight research hangar and an ice tunnel.

The Polish Air Force celebrated on July 16 the second anniversary in England of Polish Air Force day. A new motto, "A Winged Poland" (Skrzylaty Polska) has been adopted. Polish fighter pilots have accounted for 464 enemy aeroplanes destroyed in the two years, of which the all-Polish day fighter squadrons have shot down more than 350, a night fighter squadron has destroyed 19 and the remainder have been shot down by Poles flying with British fighter squadrons. One Polish squadron, No. 303, has a total of 175 enemy aeroplanes shot down, the second highest squadron total in Fighter Command. In 1940 Polish squadrons were commanded by British pilots and also had British flight commanders. To-day, the Poles have their own squadron leaders and flight commanders in two fighter wings taking part in offensive operations. In the West country Poles have manned a complete sector of Great Britain's air defences.

A cheque for £5,691 collected by the Women's Land Army from Land Girls throughout the country, was presented to a fighter pilot of the R.A.F., Squadron Leader Barry Heath, D.F.C., on July 20. The money is to be used for a Typhoon, which is to be named "The Land Girl." The cheque was presented on behalf of the Women's Land Army by a Land Girl representing Worcestershire, the county which collected the highest amount of money per head.



The Hawker Hurricane has been claimed our chief defender in the Battle of Britain. This great fighter has been re-vitalised—the Hurricane IIC has a more powerful Rolls-Royce Merlin engine and the phenomenal armament of four 20 mm. cannon.

[Advt.]



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Pride in Achievement



XI-THE BRISTOL BEAUFORT

ONE OF THE MOST EFFECTIVE WEAPONS in modern naval warfare is the air-launched torpedo. And of all torpedo aeroplanes the Bristol Beaufort of the Royal Air Force has probably flown more hours on operations than any other and has proved itself to be the most effective in action.

The Beaufort is a product of that established Bristol habit of beating the specification—in fact, two specifications—for the Beaufort is basically a combination of and improvement on the Air Ministry specifications G.24/35 for a general reconnaissance bomber, and M.15/35 for a shore-based torpedo-bomber. The Bristol Aeroplane Co., Ltd., submitted designs for both these sets of specifications in 1935. The torpedo-bomber design provided for two Bristol Perseus motors.

Meanwhile, the Bristol Design Department had investigated the specification further and decided that, as the M.15/35 had to carry bombs anyway, the provision of two different types for general reconnaissance and torpedo dropping was uneconomical and ridiculous. So in February, 1936, a new design was submitted, which combined in one machine all the requirements of the two original specifications, with a higher performance to be obtained by use of the new Bristol Taurus motors. A design to the same combined specification was submitted by Blackburn's with the Perseus engine.

Still the Bristol Design Department, led by the late Captain F. S. Barnwell and Mr. L. G. Frise, were not satisfied. The combined G.R. and T.B. aeroplane met, but did not exceed the specification except in speed. The rear defence was only one Lewis gun and the design did not allow for the future developments in air-launched torpedoes, which to them seemed inevitable. The design was therefore revised once again to increase the range, load, stowage space, and armament. The bomb bay was widened to take new types of bombs then in their embryo stage, and a four-gun turret was incorporated. Furthermore, the suspension of the torpedo was improved and made semi-internal and the old method of loading from trolleys was supplemented by built-in winches, which hoisted both bombs and torpedo into position.

The four-gun Bristol turret was probably the most striking feature of the design at this date—1935. It had a belt feed, which seemed a reasonable development, in view of the inadequate nature of the Lewis drums. Unfortunately, although all the other modifications to the original specification were accepted by the Air Ministry, the four-gun turret was not. The reason given was that insufficient guns would be available in the event of war to arm reconnaissance types so heavily. All the gun output would be required for fighters.

A new single-gun turret (with provision for two guns later) was designed, instead of the four-gun project, and detail

design of the Beaufort in the general form in which it is known to-day began in March, 1937. The prototype flew in October, 1938, and the first production version a year later. Just over four years elapsed from the time when the specification was first circulated by the Air Ministry until more than 100 Beauforts were in service. But design work on the Beaufort had anticipated work which might have had to be done on the Beaufighter. Because of the incorporation of so many parts of the Beaufort in the Beaufighter, the period which elapsed between the suggestion of the latter design by the Bristol Aeroplane Co., Ltd., and the time when 100 were in service was only two years.

Bristol Beauforts have seen action over the North Sea, the English Channel, the Atlantic and the Mediterranean. They are in service in large numbers in Coastal Command. The Beaufort II, with the Pratt and Whitney Twin Wasp motor, is in production in Australia, and has already distinguished itself against the Japanese.

Since the machine first came into service in 1940, various detailed improvements have been made. These include the addition of two Vickers guns in the nose, side guns, semi-circular plates on the trailing edge of the wing to improve the airflow—particularly during the climb, when the cowlings are open—and improved radio equipment. At one time a periscopic backwards-firing gun was fitted in the nose. This modification is not now incorporated in the production type.

Beauforts seldom make the headlines. Their work is largely routine, and weeks may pass without their being mentioned in official communiqués. Yet they keep ceaseless watch over the seas, searching for the enemy ships which hug the coasts of North-West Germany and the occupied countries. Scores of vessels have been sent to the bottom by their bombs and torpedoes, scores have been damaged and disabled. Mines they have laid have closed important sea routes, dislocated maritime services and held up the training of submarine crews. That part of their work goes on day and night.

Occasionally they have their big moments. It was a Beaufort that pierced the defences of Brest in daylight and torpedoed an enemy battle cruiser; Beauforts assailed the Scharnhorst, Gneisenau and Prinz Eugen when they made their memorable dash up Channel, and Beauforts formed the spear-head of attack when the Prinz Eugen, in need of major repairs, was shepherded from Trondheim to safer quarters at Gdynia.

To-day we know the Beaufort's record of war service only in part. When the full story is written, the long, weary hours of search and reconnaissance which make up the greater part of its life will merely form a background to a narrative rich in adventure and daring achievement—the story of an aeroplane which is contributing as much as any to the winning of the War.

"I AM AN AIRCRAFT DESIGNER"—X

A technical hitch prevented Mr. Northrop from giving his scheduled talk from America in the B.B.C. Forces Programme on July 6 in the series "I am an Aircraft Designer." To fill the gap, the B.B.C. broadcast for the first time recordings made after the Schneider Trophy Race of 1931 by the late R. J. Mitchell, C.B.E., designer of the Vickers-Supermarine Rolls-Royce S.6B which won the race, by Mr. A. J. Rowledge, designer of the Rolls-Royce motor which powered the seaplane, and by Flight Lt. (now Group Captain) J. N. Boothman, who won the race.



The late R. J. Mitchell.

MR. MITCHELL SAID: In the design of a seaplane of this type, the one outstanding and all-important requirement is speed. Every feature has to be sacrificed to this demand; the result of this is that every part of the aircraft just and only just fulfils its requirements. A very exact knowledge of the functioning of the details is, therefore, essential, requiring an enormous amount of research and investigation. Conventional methods of design are not good enough; it is essential to break new ground and to invent and evolve new methods and new ideas. The important aim of the designer is to reduce air resistance.

Of the total air resistance of the S.6B as much as 70 per cent. is brought about by the friction between the air and the surface of the aircraft. The shapes of the fuselage and floats are such that air resistance is very little higher than that of the purest streamline form. The floats are made so small for the load they have to carry that their reserve buoyancy is less than 40 per cent. The usual reserve buoyancy for seaplane floats is about 100 per cent.

The problems of float design are further increased by the enormous torque developed by the engine. The effect of this torque is to raise one float and depress the other, resulting in the aircraft swinging off its course if the balance is not maintained in some way. This is overcome by carrying a larger load of fuel in one float than in the other, and calls for a very sensitive device to ensure that the balance of fuel is maintained during flight. The underwater lines of the float are of extreme importance. Before taking the air the aircraft must accelerate to a speed of over 100 miles an hour—almost equivalent to the World's speed record on the water. The floats must run perfectly smoothly; any instability at high speed would be fatal.

The cooling of the engine presents many interesting features; the usual methods employed either by air-cooling or by honeycomb radiators have very high air resistance. On the S.6B the engine is cooled without adding any air resistance. The cooling water is circulated over both surfaces of the wings and most of the surface of the floats, the covering being of a special double-skin construction.

Similarly the oil is circulated along the sides of the body and over the surface of the fins. During flight heat equivalent to 1,000 h.p. is being passed to the air from these surfaces. The S.6B has been aptly described as a flying radiator.

Stability and control in flight must be exactly right. The pilot must be protected from the enormous air pressure and from exhaust fumes. He must get a very adequate supply of fresh air and he must have a very good view.

I must express my greatest admiration for the pilots of the high speed flight of the Royal Air Force, who carried out trials and operated these machines. Their job required great courage and great skill and they played a very important part in developing the machines to their final state.

The question is often asked: "Will higher speeds be attained in the future?" I feel sure they will. The problems of still higher speed are no more intense at this stage than they have been at any stage in the past. For the present, however, it is generally considered that high speed development has served its purpose. It has accumulated an enormous amount of information which is now being used to improve the breed of every-day aircraft. It is helping to develop our great air liners and ocean-going flying-boats, and is thus bringing closer together outlying parts of the British Empire. This, indeed, is an objective worthy of all our greatest efforts.

Mr. Rowledge said: It was not until Lady Houston so generously came forward with her offer to defray the cost of the machine that a decision was made that Great Britain should take part in the 1931 Schneider Trophy Contest. This decision might easily have been

fatal to our chances, as very little time—only seven months—was left for the development of the design to the new standard, and the construction of the actual racing engine. Fortunately, the problem had already been considered and informal discussions had taken place between representatives of the Vickers-Supermarine and Rolls-Royce Company, and later the matter was further considered at a conference presided over by the late Air Vice-Marshal Holt.

At this conference the Rolls-Royce Company's engine builders undertook to increase the horse-power output by 400, thus bringing it up to 2,300 at 3,200 revs. per minute. On one full throttle acceptance test the output given was over 2,300. This increase in horse-power brought several problems forward affecting the seaplane and also the airscrew maker. More fuel had to be carried and more cooling surface provided. As regards the fuel, they were able to help by reducing fuel consumption per horse-power per hour.

However, the limit of development has not yet been reached as regards engine construction. We think it will be agreed by most people who saw the engines perform that they did their work in quite a gentlemanly fashion, and that, besides giving good power, they were docile and ran smoothly. Looking at the engine, it is, perhaps, difficult to believe that it can give more power than a railway engine, which has such an imposing size and weighs so many tons.

Flt. Lt. Boothman said: The first lap was flown at full throttle, and the turns were taken rather wide in order that there should be no risk of disqualification. After about one and a half laps, the water temperature started to rise above the maximum allowed for the race, and so the throttle had to be eased back slightly for the remainder of the contest. Weather conditions were good, visibility excellent, and over the sea the air was smooth, but near Southsea, where the course was slightly inland, bumpy air was experienced. Bumps on high-speed aircraft are rather disconcerting, because instead of the aircraft moving gently up or down one experiences a sudden jar that can be felt throughout the aircraft's structure. In view of this, after the fourth lap, I flew out to seaward at Southsea in order to miss these disturbances. After about 20 minutes the cockpit became very hot and stuffy, and I was glad of the breathing tube, which led a draught of cold air on to my face.

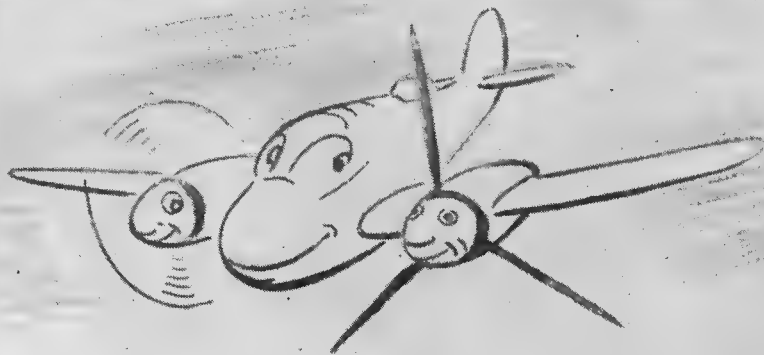
During the fifth lap my legs began to get slightly cramped, owing to the small cockpit. I rested my knees on the side of the fuselage. However, I quickly moved them when I found that the cockpit walls were blistering hot, and decided that cramp was the lesser evil. During the last lap the engine was still giving the same healthy noise and the aircraft was still flying perfectly. Round at the last turn I opened the throttle full out once more for the final four or five miles to the finish, and then a climbing turn and an amble back to Calshot on about a quarter throttle at 200 miles an hour, the final closing of the throttle, a left-hand gliding turn, and an alighting—and the last Schneider Trophy Contest was over.



["Aeroplane" photograph]

RECORD BREAKER.—The Supermarine S.6B, which won the Schneider Trophy in 1931, at 340 m.p.h. On September 29, 1931, the same machine, flown by Flight Lt. G. H. Stainforth, A.F.C., seen in the cockpit, set up a World's Record for speed at 407.5 m.p.h.

From a Test Pilot to his young brother



Both engines will be
much happier.

Tweddall 7:30 pm
106655

when I saw
said to him

Of course

But you know all about
Nevertheless I know you won't mind
this sort of advice from me - Don't
wait to feather the propeller till it's too
late. If you're feathering, do it early
- do it early Pilot dear. Both engines
will be much happier; and don't hold
the feathering switch in when feathering.

Just press and release - you may get 2d
back. If the switch doesn't pop out when
feathering is complete - then pull it out -
if you don't you're letting the propeller do
something it didn't ought to, and that
might be bad for the engine and
unpleasant for you.

So much for that. Do you
remember how gawky young Mary was?
Boy, you should see her now!
Smartest and best looking lass in

THE AEROPLANE
JULY 24, 1942



MORRISON

CROYDON

WINGS ■ FINS ■ TAIL PLANES ■ AILERONS ■ RUDDERS ■ EQUIPMENT ■ ETC.



STURZKAMPFFLUGZEUG
DORNIER
DO 217



Der schnellste Jäger der Welt
FOCKE-WULF FW 190

STURZKAMPF FLUGZEUG
**JUNKERS-
JU 87**




MIT JUNKERS-HOCHLEISTUNGS-
FLUGMOTOR

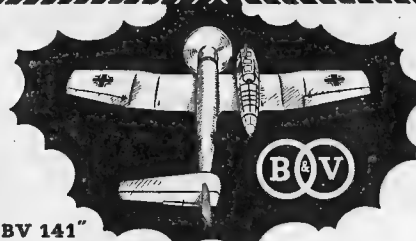
JUNKERS FLUGZEUG- UND -MOTORENWERKE A.-G., DESSAU



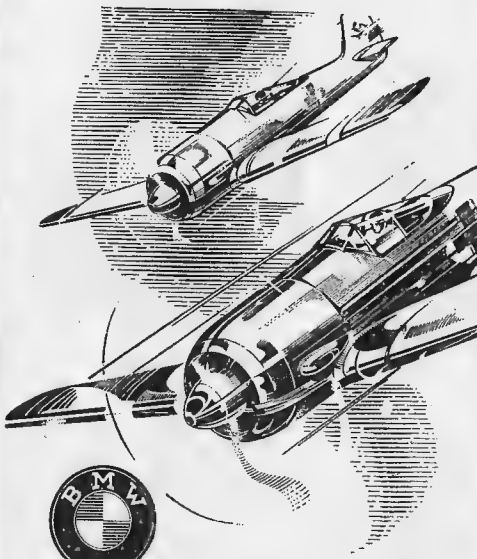
MESSERSCHMITT A.G. AUGSBURG

BOOSTING ABROAD

Advertisements of the German Aircraft Industry shown on this page compare poorly in material and treatment with many of the artistic efforts of British and American aircraft constructors to be seen in aeronautical journals of the United Nations.



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dans le Focke-Wulf FW 190



MESSERSCHMITT A.G. AUGSBURG

Für Holz- und Metallpropeller

jeder Motorentype

ALBERT RUPP

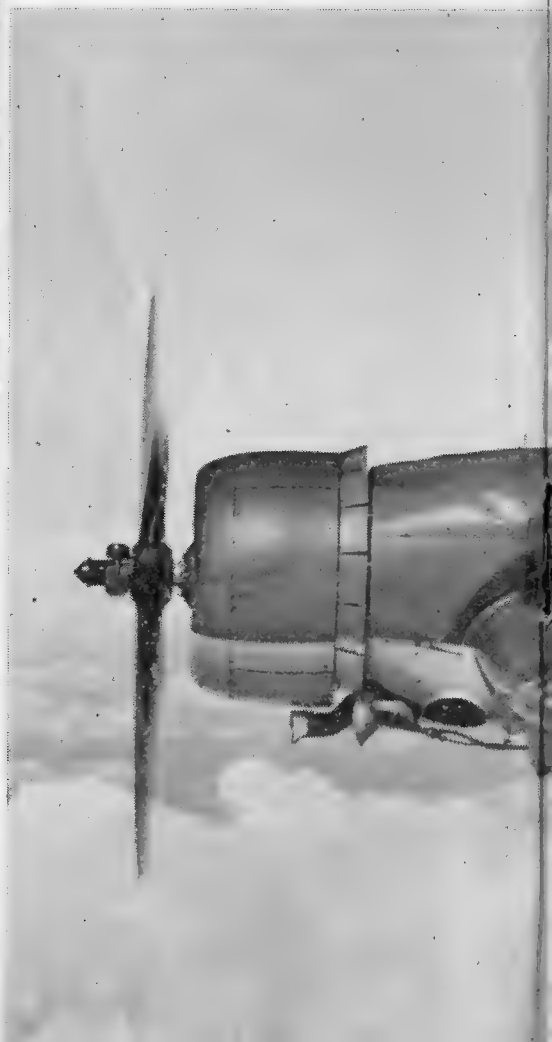
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Berlin-Neukölln, am Flughafen



Photographs by Leslie Hammond

THE MILES

(One 825 h.p. Pratt and Whitney)





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MASTER III

Twin Wasp Junior radial motor)



THE ROYAL AIR FORCE



RHODESIAN SQUADRON IN THE MIDDLE EAST.

THE ROLL OF HONOUR

THE ONE HUNDRED-AND-FORTY-FIRST AND ONE HUNDRED-AND-FORTY-SECOND Casualty Lists were published by the Air Ministry on July 14 and 15. They contain 497 names of R.A.F. personnel, including those of 273 mentioned in previous lists, missing in action or on active service and now reported or presumed killed.

The lists also include 81 killed in action or on active service, 33 died of wounds or injuries in action or active service, 27 wounded or injured in action or on active service and 74 missing or missing believed killed in action or on active service.

The total of R.A.F. casualties officially reported since the War began is now 26,035.

The One Hundred-and-Forty-first and One Hundred-and-Forty-second Casualty Lists are:—

Killed in Action

11113081 Sgt. J. F. Bunting.
10582227 Sgt. J. K. Fullalove.
535552 P/O P. A. Major.
113759 P/O P. A. Nash.
1291218 Sgt. R. N. Thain.
1381092 Sgt. W. H. Rickett.
Previously Reported Missing Believed Killed in Action, Now Presumed Killed in Action
614202 Sgt. G. B. Daines.
1173925 Sgt. R. W. Hunt.
568237 Sgt. T. E. Jordan.
981601 Sgt. L. Lawson.
1052470 Sgt. C. Robinson.
904509 Sgt. T. J. Sherriff.
1282785 Sgt. S. N. N. O. L. B. Smart.
532602 Sgt. J. P. Sullivan.
917337 Sgt. G. E. Williams.
37394 W/C J. W. S. Forbes.

Previously Reported Missing, Now Presumed Killed in Action

1379183 Sgt. J. T. Ackroyd.
106364 P/O J. C. A. Alchin.
988954 Sgt. H. I. S. Armes.
1127158 Sgt. J. G. Armstrong.
1378960 Sgt. W. Bainbridge.
617012 F/Sgt. J. E. Baich.
1378959 Sgt. J. G. Bell.
1113757 Sgt. G. H. S. Bennett.
568024 Sgt. S. Bentley.
754402 Sgt. R. A. Berry.
959020 Sgt. G. E. Bradley.
745309 F/Sgt. K. C. Brown.
979336 Sgt. W. Buchan.
60830 P/O G. F. Bunday.
759333 Sgt. J. Campbell.
800570 Sgt. W. C. Clarke.
1002345 Sgt. H. A. Cook.
955476 Sgt. T. Copsey.
1154434 Sgt. D. C. Cranston.
966123 F/Sgt. A. McD. S. Dargie.
1154617 Sgt. B. H. Dennis.
745331 F/Sgt. H. W. Duffield.
636262 F/Sgt. B. R. Edis.
1325097 Sgt. E. W. Elkington.
65534 P/O L. N. Evans.
1001597 Sgt. G. W. Fenton.
103592 P/O A. M. Fisher.
748116 Sgt. H. M. Forth.
751138 F/Sgt. J. R. France.
81399 P/O A. Franke

101588 P/O W. J. Frost.
1052475 Sgt. J. Gill.
749432 F/Sgt. D. Grocott.
75362 Act. S/L G. C. Halley.
64312 P/O W. D. C. Hardie.
1263188 Sgt. J. E. Hawkins.
917812 Sgt. A. C. Hayter.
1058668 Sgt. E. Healy.
986613 Sgt. T. E. Hedefine.
962181 Sgt. L. G. Hillier.
1060924 Sgt. R. L. Hunt.
1163268 Sgt. V. G. Lee.
924902 Sgt. F. R. Lamin.
1108738 Sgt. W. C. Lees.
957920 Sgt. W. F. W. Lewis.
103560 P/O J. Lindsay.
890992 P/O C. D. Loughlin.
818092 F/Sgt. L. J. McDonald.
60787 P/O C. McLean.
74264 F/Sgt. D. McTavish.
62003 P/O E. D. Main.
1014916 Sgt. E. D. Minshall.
932393 Sgt. T. G. Miskin.
60311 P/O F. M. Moss.
87458 P/O S. G. Nicoll.
755517 F/Sgt. W. J. Pearce.
42431 F/O N. R. Peel.
988992 Sgt. F. A. Pegram.
946888 Sgt. D. B. Pepper.
1051814 Sgt. F. T. Prest.
913652 Sgt. C. W. Robinson.
1057469 Sgt. J. J. Robinson.
1050936 Sgt. E. Rowlands.
1166718 Sgt. J. Sansome.
747833 Sgt. P. Shane.
649728 F/Sgt. A. E. Smith.
102606 P/O F. L. Smith.
957039 Sgt. E. D. Spry.
755884 F/Sgt. J. G. Swan.
967899 F/Sgt. H. O. Talty.
83733 F/O E. W. Tate, D.F.C.
925058 Sgt. D. R. Thompson.
1152760 Sgt. T. H. Thorley.
67084 P/O H. Walter.
42287 F/O G. Washington.
755474 Sgt. W. Watson.
758163 F/Sgt. J. P. Wilkins.
1375436 Sgt. E. J. Wrampling.
654691 Sgt. W. Young.
1164953 Sgt. L. J. Atkins.
988994 Sgt. R. H. Atkinson.
930437 Sgt. G. L. Bailey.
1165223 Sgt. R. G. Banks.
901205 Sgt. D. H. Barrett.
84318 Act. F/L E. A. Barsby.

777798 Sgt. P. H. Bell.
89541 P/O J. D. Berry.
915145 Sgt. A. L. Boyde.
1150208 Sgt. R. A. Bramley.
1379133 Sgt. J. I. Bramwell.
758051 Sgt. L. Briggs.
106530 P/O E. E. Brown.
919091 Sgt. L. J. Burcher.
944249 Sgt. W. D. Capewell.
104421 P/O F. R. Clarke.
1162271 Sgt. D. F. Conley.
932086 Sgt. H. J. Cooper.
61239 P/O J. P. Croker.
968654 Sgt. W. H. Cubbon.
553001 Sgt. M. W. Cullerne.
24249 W/C R. S. Darbyshire.
87565 F/O K. L. Davies.
1014105 Sgt. K. D. Deadman.
1167919 Sgt. R. D. C. Dean.
1283306 Sgt. A. R. A. Dexter.
968019 Sgt. J. B. Drury.
1252028 Sgt. S. G. T. Farman.
1378255 Sgt. E. Fieldhouse.
1021175 Sgt. R. E. Glenny.
1253473 Sgt. P. A. Goodley.
1053521 Sgt. S. D. C. Gray.
1250820 Sgt. E. I. L. Grego.
1166485 Sgt. L. H. Gruer.
960499 Sgt. G. L. Hall.
1006118 Sgt. R. N. Hannam.
70839 Act. W/C F. A. Harte, D.F.C.

77922 F/O G. A. Hoar.
1152495 Sgt. K. A. Holmes.
921014 Sgt. S. E. Horsfall.
959988 Sgt. R. B. How.
921902 Sgt. C. C. Hynam.
1157291 Sgt. R. G. Kidby.
1053405 Sgt. J. H. Killick.
918519 Sgt. J. H. Knight.
929872 Sgt. C. G. Knighton.
929438 Sgt. C. C. Kolar.
778163 Sgt. A. T. Laing.
36242 F/O L. D. Loasby.
653675 F/Sgt. T. J. McHugh.
534062 Sgt. D. McIntyre.
989146 Sgt. J. H. Malet-Warden.
755718 F/Sgt. S. R. Mandall.
632301 Sgt. F. W. Manners.
943614 Sgt. E. F. C. Maslen.
36233 F/O J. Mitchell.
767079 P/O A. D. Moore.
37113 S/L O. R. C. Moseley.
755444 F/Sgt. E. G. Newnham.
45723 P/O W. G. Noble.
917000 Sgt. W. F. Parsons.
84320 P/O G. H. J. Pickering.
552603 F/Sgt. C. R. Preece.
41736 F/L C. P. D. Price, D.F.C.

1161595 Sgt. K. Quick.
1180446 Sgt. S. C. Ray.
1186848 Sgt. F. C. Reeve.
962378 Sgt. A. H. Rhodes.
1160291 Sgt. W. D. Rowbotham.
987979 Sgt. G. S. Rye.
1252132 Sgt. N. F. Sewell.
535826 F/Sgt. C. Stanley, D.F.M.
39448 Act. S/L A. L. Taylor, D.F.C.
568813 Sgt. S. W. Todd.
85007 F/O C. H. L. Tulloch.

1283647 Sgt. M. A. Weavers.
953719 Sgt. R. F. Whittin.
1057688 Sgt. W. J. S. Wolstenholme.
1056815 Sgt. R. M. Worthington.
86673 P/O J. M. Wyley.

Previously Reported Missing, Now Reported Killed in Action

34038 W/C E. H. P. Clarke.
1354775 F/Sgt. R. H. Brown.
971524 Sgt. J. Davison.

Wounded or Injured in Action

81674 Act. S/L R. C. Dafforn, D.F.C.
45301 F/L H. J. Houghton.
1060388 Sgt. E. A. Stott.
108839 P/O R. W. James.
532310 Sgt. J. Robertson.

Died of Wounds or Injuries Received in Action

904387 Sgt. E. D. Allen.
1052476 Sgt. G. Douglas.

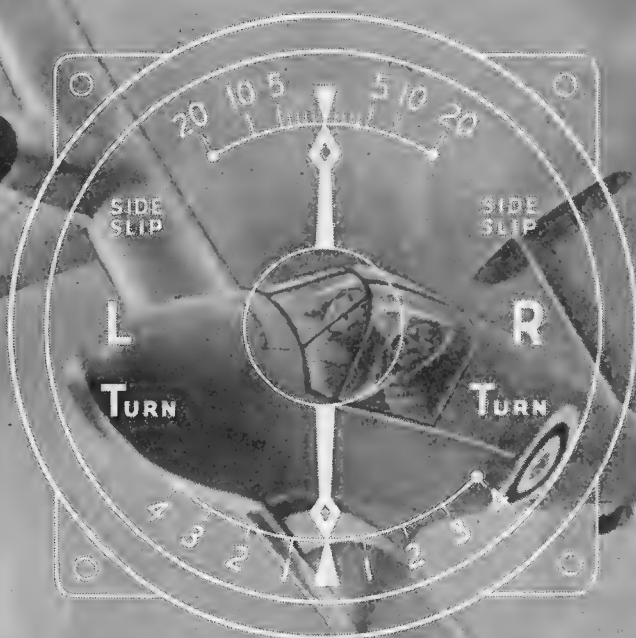
Missing, Believed Killed in Action

967594 Sgt. S. Briggs.
67046 P/O J. H. Morphett.
647009 F/Sgt. A. H. Salter.
100558 P/O H. A. Shortt.
1251531 Sgt. G. M. C. Turner.
923926 Sgt. R. S. Williams.
1376987 Sgt. A. G. Harvey.
1006968 Sgt. M. D. Jones.
1375483 Sgt. B. J. McGinn.
1161197 Sgt. I. MacV. Mackirdy.
1381070 Sgt. W. G. Marsh.
1288649 Sgt. J. Potter.
1250695 Sgt. R. M. Sutton.
934087 Sgt. D. H. Till.
115993 P/O A. Wilkinson.

Missing

113907 P/O J. A. Baraw.
927161 Sgt. P. S. Brundeson.
64920 F/O E. Dickinson.
1181845 Sgt. A. C. F. Digby.
1180424 Sgt. O. R. East.
1092735 Sgt. V. E. Egan.
119347 P/O M. L. Field.
118192 P/O J. R. Fisher.
998624 Sgt. P. Heppensta.L.
986794 Sgt. N. C. Hutson.
54827 Sgt. E. A. Kirk.
931744 Sgt. C. Moynes.
41608 F/L H. L. North.
100048 P/O D. J. Perdue.
1580948 Sgt. G. V. Phillips.
1170645 Sgt. G. D. Randall.
1377475 Sgt. E. G. A. Stevens.
1064100 Sgt. J. Ward.
1281125 Sgt. R. C. E. Willingham.
1376757 Sgt. W. D. Amos.
751937 F/Sgt. R. Ballantyne.
921754 Sgt. B. I. J. Daly.
977122 Sgt. T. A. F. Davies.
63092 Act. F/O H. P. Duval.
535590 F/Sgt. G. A. Edwards.
1254454 F/Sgt. P. W. C. Flannery.
807146 F/Sgt. H. V. Gill.
1282703 Sgt. P. F. Green.

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P.7

ALL ENQUIRIES TO GREAT WEST ROAD LONDON.

70859 F/L W. R. Hole.
37502 S/L D. H. Holmes, A.F.C.
1280787 F/Sgt. M. J. R. Larcher.
524132 F/Sgt. W. Lock.
1108340 Sgt. D. M. MacFarlane.
633509 Sgt. C. L. Merricks.
620700 F/Sgt. J. North.
938642 Sgt. G. T. Rhodes.
749588 F/Sgt. W. B. Richmond.
751098 Sgt. D. O. Rickard.
923920 Sgt. B. E. Whitbread.
1157843 Sgt. J. A. Winton.

Killed on Active Service

75333 F/L W. J. C. Anstie.
1358728 L.A.C. F. W. D. Barrett.
103012 P/O E. J. Beasley.
116574 P/O J. Bramley.
108154 P/O H. P. Brouwer.
565225 F/Sgt. D. A. Bryant.
1187705 L.A.C. G. A. Corneli.
108650 P/O A. E. Crane.
108371 P/O D. E. Farnham.
40350 S/L H. T. G. G. G.
742304 W/O J. J. Griffin.
116442 P/O J. D. Gordon.
657613 L.A.C. G. Holmes.
1513761 Sgt. K. W. Holt.
1165221 F/Sgt. P. J. V. Johnson.
120869 P/O D. B. Lacey.
105530 P/O W. E. London.
572254 A.C.2 A. Moriarty.
1475328 L.A.C. R. A. Parry.
538262 Sgt. C. G. Pritchard.
82429 F/L D. G. Ross.
1096431 L.A.C. G. L. Simpson.
130203 P/O J. M. Snow.
758241 F/Sgt. T. A. Quinn.
776753 L.A.C. G. Scienluna.
44199 F/O W. D. Whitley.
1034542 L.A.C. P. F. Blackmore.
1511845 Sgt. V. G. Bolam.
1075896 Sgt. W. Bray.
1050128 Sgt. A. Broadbent.
116378 P/O R. A. Duce.
1218546 L.A.C. E. C. Dunbavand.
82911 Act. S/L K. W. Edwards.
1010348 L.A.C. W. T. Flower.
119105 P/O S. N. Hackforth.
976547 L.A.C. J. Lewis.
339005 Sgt. C. L. Lewis-Hall.
932286 L.A.C. M. McEwan.
43207 Act. F/L L. Otter.
1446712 A.C.2 R. Potter.
1181850 Sgt. A. Powell.
69642 P/O I. Ramsay.
938162 F/Sgt. J. B. Smith. D.F.M.
569426 F/Sgt. A. J. Stripp.
615773 Sgt. J. E. Taylor.
1377533 Sgt. E. A. Trickey.
1107499 Sgt. G. Warren-Wright.
81283 Act. F/L F. W. Wilton.

Previously Reported Missing, Now Killed on Active Service, Now Presumed Killed on Active Service

1017872 A.C.1 G. Baines.
635084 L.A.C. J. F. C. Cliffe.
1141853 A.C.1 W. Fisher.
971724 Cpl. H. Kin.
1314070 A.C.1 E. J. Lee.
1269209 L.A.C. G. H. R. Leverington.
1315240 A.C.1 A. R. Manchip.
1059690 L.A.C. L. H. Quinn.
1235550 A.C.1 W. G. Titherington.
1204580 A.C.1 H. J. Whatmore.
572591 Cpl. A. T. Woodman.
553765 A.C.1 K. R. E. Dutton.
1127873 Sgt. C. Martin.
1099270 A.C.2 J. A. Morris.
751583 F/Sgt. L. J. Parr.
1375445 Sgt. L. G. Staniland.
1337380 A.C.2 I. Tankel.

Previously Reported Missing, Now Presumed Killed on Active Service

1366444 L.A.C. J. K. Allan.
950925 L.A.C. G. N. James.
1126829 L.A.C. D. H. Saxton.
1287232 Sgt. C. B. D. Bowden.
980425 Sgt. G. W. N. Dalley.
151501 Sgt. M. S. Dawe.
103197 P/O E. G. Poole.
104353 P/O E. M. S. Rutter.
1168373 Sgt. P. C. de B. Summerton.
1158394 Sgt. H. McG. Tanner.

Previously Reported Missing, Now Reported Killed on Active Service

917077 Sgt. A. Blackman.
111936 P/O R. R. Flint.
994287 Sgt. F. Jennings.
1060163 Sgt. J. Sutcliffe.
110568 P/O R. E. Wheatley.

Wounded or Injured on Active Service

1140664 Cpl. W. T. Bonner.
626979 F/Sgt. R. C. Cowley.
630812 Cpl. R. Dobson.
1001800 Cpl. A. R. Fawcett.
658208 Cpl. J. Jamieson.
111777 P/O R. H. Sergeant.
40921 P/L A. F. H. Joyce.
1344043 A.C.1 R. B. Lamberton.
356774 F/Sgt. E. Smith.

Died of Wounds or Injuries Received on Active Service

81827 F/O E. O. Ievers.

Died on Active Service

1171040 A.C.2 R. H. Coles.
1549550 L.A.C. J. C. Cowan.
1129378 A.C.2 A. J. May.
107996 P/O B. M. Osborn.
1316187 A.C.1 K. J. Ryan.
920372 A.C.2 J. P. Smith.
1100155 Cpl. D. C. Uquhart.
85725 F/O H. Willis.
865254 A.C.1 C. H. Arscott.
1090192 A.C.1 N. Atkin.
1403891 A.C.2 I. P. Benjamin.
76421 S/L J. N. H. Brooke.
915069 L.A.C. A. A. Davies.
1538763 A.C.1 J. Green.
1236429 A.C.1 S. J. B. Guthrie.
1553127 A.C.2 J. G. Hull.
1258340 A.C.1 J. Keyes.
1180125 A.C.1 S. G. Kirkham.
1325122 Sgt. B. J. Langley.
565429 Sgt. D. H. Preston.
1063254 L.A.C. A. Rogers.
50919 Sgt. A. W. Taylor.
1144644 A.C.2 F. Yates.

Previously Reported Missing, Now Reported Prisoner of War

1261087 Sgt. R. E. Bale.
1380011 Sgt. R. J. Beck.
922685 Sgt. A. V. Cuthbert.
552439 Sgt. H. E. Hardy.
1115805 Sgt. F. Hartley.
1003628 Sgt. J. J. McK. Rigley.
1261113 Sgt. A. G. E. Tidd.
1056586 Sgt. K. J. Watson.
88879 F/O D. Wisdom.

W.A.A.F.**Died on Active Service**

2088351 A.C.W.2 D. Leyland.
2052724 A.C.W.1 D. F. M. Roberts.
2014770 A.C.W.2 V. P. Sampson.

ROYAL AUSTRALIAN AIR FORCE**Killed in Action**

Ans.416042 P/O C. R. Cowan.
Ans.402798 F/Sgt. D. K. Lloyd.
Ans.402825 Sgt. W. E. Pearce.
Ans.404191 Sgt. S. W. White.

Previously Reported Missing, Now Killed in Action, Now Presumed Killed in Action

Ans.404514 P/O L. W. Bailey.

Previously Reported Missing, Now Presumed Killed in Action

Ans.402645 Sgt. W. Bourke.
Ans.400146 Sgt. R. A. Knappett.
Ans.407294 Sgt. W. A. McAllen.
Ans.400423 Sgt. I. R. McCann.
Ans.400646 P/O W. G. Outwaite.
Ans.400589 P/O B. E. Hislop.
Ans.400227 Sgt. E. P. Jackson.
Ans.408014 Sgt. W. M. McQuitty.
Ans.404026 Sgt. J. McK. Simpson.
Ans.402010 Sgt. T. Taranto.

Wounded or Injured in Action

Ans.400859 Sgt. R. E. Charman.
Ans.407041 Act. F/L M. C. C. Cotton.

Ans.406261 Sgt. J. Pauley.
Ans.400196 Sgt. R. D. Stair.

Died of Wounds or Injuries Received in Action

Ans.404223 Sgt. N. H. Watt.



A FEW OF THE MANY.—His Majesty talking to pilots and crews back from a thousand bomber raid.

Missing, Believed Killed in Action

Ans.400687 P/O V. L. Bailey.

Missing

Ans.402750 Sgt. M. E. Parbery.
Ans.403371 Sgt. A. F. Peacock.
Ans.406396 Sgt. H. Janney.
Ans.406501 Sgt. C. E. Johnson.
Ans.405014 P/O T. G. Leitch.
Ans.406412 Sgt. J. M. Shiner.

Killed on Active Service

Ans.404059 F/O W. C. Russell.
Ans.407070 Sgt. M. J. H. Baillie.
Ans.402717 Sgt. W. A. Beard.

Previously Reported Missing, Now Killed on Active Service, Now Presumed Killed on Active Service

Ans.400467 Sgt. H. L. Gibson.
Ans.403119 Sgt. H. E. Barklay.
Ans.402149 Sgt. M. J. Bell.
Ans.402451 Sgt. H. B. Morgan.
Ans.400482 Sgt. M. W. E. Paul.

Previously Reported Missing, Now Presumed Killed on Active Service

Ans.404719 Sgt. C. A. J. Gillespie.
Ans.400692 Sgt. R. T. Brewin.
Ans.400713 Sgt. T. A. H. Hiddleston.

Ans.404365 P/O D. J. Ritchie.

Wounded or Injured on Active Service

Ans.404608 P/O A. W. McLean.

ROYAL CANADIAN AIR FORCE**Killed in Action**

R.68697 Sgt. M. L. Doyle.
R.72400 Sgt. J. Paton.
J5335 P/O A. C. White.

Previously Reported Missing, Now Killed in Action, Now Presumed Killed in Action

J4823 Act. F/L G. C. Pryor.
R54201 F/Sgt. J. D. Woodburn. D.F.M.

Previously Reported Missing, Now Presumed Killed in Action

R52850 F/Sgt. C. H. Bell.
R68121 Sgt. W. H. S. Byers.
R64736 F/Sgt. C. D. Cooling.
R68108 Sgt. B. J. Dermody.
R51644 Sgt. L. E. Dodge.
R69514 F/Sgt. J. F. Gauley.
R74248 Sgt. C. R. Hall.
R68075 F/Sgt. N. G. Hettrick.
R56152 Sgt. M. Livis.
R54235 Sgt. J. G. Mackay.
R14040 F/Sgt. G. F. Marr.
J3600 P/O A. L. Miller.

R64729 F/Sgt. E. B. Muttart.
R54993 F/Sgt. F. G. Nadeau.
R61111 Sgt. D. M. Palethorpe.
J941 Act. P/O A. E. Snell.
R78239 Sgt. P. T. W. Walker.
J4785 P/O W. R. J. Brown.
R.73253 Sgt. K. C. Carr.
J.15078 P/O G. A. Chamberlain.
J.5080 P/O D. M. Elliott.
J.5663 P/O H. E. English.
J.5043 P/O J. S. Gain.
R.61076 F/Sgt. F. J. Hazlett.
R.64424 F/Sgt. C. E. Hillmer.
R.73296 Sgt. W. E. Hovey.
J.3511 P/O G. C. H. Jackson.
R.71689 Sgt. A. J. Knight.
R.64722 F/Sgt. F. M. Legere.
J.5621 P/O K. B. McGoun.
R.61354 Sgt. R. P. Mann.
J.2830 P/O R. A. Mather.
R.69759 F/Sgt. G. R. Yeates.

Wounded or Injured in Action

J.15095 P/O N. R. Fowlow.
R.5997 P/O V. H. Johnson.
R.64718 F/Sgt. D. A. Black.

Died of Wounds or Injuries Received in Action

J.6146 P/O R. A. Baker.

Missing, Believed Killed in Action

R.69897 Sgt. C. De W. Gellatly.
J.5490 P/O L. M. Leech.
J.15126 P/O F. B. Grundy.
R.67687 Sgt. C. E. Wisrod.

Missing

J15231 P/O A. G. Griffith.
R66159 Sgt. G. C. Fisk.
J5490 P/O L. M. Hancock.
R74420 F/Sgt. T. C. Macfarlane.
J15242 P/O R. J. Majeau.
C2647 F/O B. O. Parker.
J15106 P/O J. R. Patton.
R64917 F/Sgt. J. A. Richard.
R80179 Sgt. A. E. J. Wheadon.
R.59294 Sgt. J. Carmack.
R.68105 F/Sgt. G. A. J. Rychman.
R.67798 Sgt. W. S. Tyler.

Missing, Believed Killed on Active Service

R61110 Sgt. W. T. Braun.

Killed on Active Service

C2892 F/L K. H. Moon.
J10227 P/O W. T. Moyer.
C1593 F/L F. G. Pafford.
J7419 P/O E. R. Taylor.
J15347 P/O T. F. Watt.
R.91867 Sgt. M. H. Brandon.
R.74488 Sgt. C. McC. Carkner.
J.7457 P/O J. N. Lewis.
R.77326 Sgt. E. A. Owen.

Previously Reported Missing, Now Killed on Active Service, Now Presumed Killed on Active Service

R.57927 F/Sgt. D. Chapman.
R.75814 Sgt. T. E. Tressam.

Previously Reported Missing, Now Presumed Killed on Active Service

R.68668 Sgt. C. C. Gardiner.
R.74329 Sgt. J. L. Collins.

Previously Reported Missing, Now Reported Killed on Active Service

R.88694 Sgt. D. F. Drake.
R.72714 Sgt. G. K. Macrae.

Died on Active Service

R79941 L.A.C. J. F. McMahon.

ROYAL NEW ZEALAND AIR FORCE**Previously Reported Missing, Now Presumed Killed in Action**

NZ.40648 P/O M. Jolly.
P/O W. A. Middleton.
NZ.40628 P/O K. S. Peterson.

D.F.C.
NZ.401457 Sgt. D. A. Connolly.
NZ.401817 Sgt. G. S. Walker.

Died of Wounds or Injuries Received in Action

NZ.404385 F/Sgt. J. R. Liken.

Wounded or Injured in Action

NZ.41508 P/O R. J. Dempsey.
NZ.401779 P/O L. M. Ralph.

Missing, Believed Killed in Action

NZ.402188 F/Sgt. G. D. Hutchinson.

Missing

NZ.41887 P/O A. L. Ellis.
NZ.41916 P/O K. L. Lee.
NZ.41300 Sgt. L. H. Baxter.
NZ.403978 F/Sgt. J. G. McCutchen.

Killed on Active Service

NZ.404904 Sgt. C. L. Davidson.

SOUTH AFRICAN AIR FORCE**Killed in Action**

102688 Capt. G. G. Bayly.
103884 Lt. L. J. P. Berrange.
103775 Lt. M. P. Ironside.

Wounded or Injured in Action

83638 Lt. S. Muir.
102271 Lt. T. V. B. Van der Riet.
203184 Capt. R. L. Morrison.

Missing

47804 Lt. N. S. Ford.
205546 2nd Lt. R. F. Marshall.
47854 Lt. D. Paddon.
103671 2nd Lt. C. C. P. Steyn.
103979 Lt. R. E. Jackson.
102201 Cpt. J. Morphet.



ROYAL INTEREST.—H.M. The Queen inspecting a bomber's rubber dinghy.

EXTRACTS FROM THE LONDON GAZETTE

Air Ministry, June 16.

AUXILIARY AIR FORCE

GENERAL DUTIES BRANCH.—Fg. Offs. to be Plt. Lts. (war subs.):—May: L. Mackintosh, P. G. H. Pearson, D.F.C.

WOMEN'S AUXILIARY AIR FORCE

To be Asst. Sec. Offs. on prob. (emergency):—May: E. B. Allom, Helen Armstrong, C. C. Atwood, Joan Baydon, I. E. D. Beadie, D. K. Beardsley, P. M. Benfield, A. B. L. Bolton, Gladys Bruce, L. A. Burn, D. K. Conner, Margaret Cooper, M. F. Crotch, Millicent Deal, Margaret Dixon, Moira Dodds, J. E. M. Dodson, E. M. Duncanson, H. M. Dunnett, M. I. Durie, C. Catherine Eadie, S. M. S. Elvins, D. Y. Fisher, K. M. Figan, P. M. Gibson, P. M. M. Gosman, M. R. Hawke, A. M. Hawthorth, Betty Hearn, E. L. Heath, E. L. Henderson, L. E. Henwood, M. S. Hogan, C. J. M. Holbeck, P. S. M. Hollier, E. C. James, I. J. Jessop, M. C. Lermitt, K. M. C. Logie, P. M. Lowries, M. McN. McDougall, D. C. MacElean, D. J. Merwood, B. L. M. Morris, Gwendoline Mortimer, M. J. Murray, K. S. Narup, R. A. Parnell, J. V. Pile, J. S. Piper, Winifred Pool, A. D. Proctor, I. G. Reid, K. G. Reid, Constance Roberts, Barbara Rogers, G. H. Scott, R. MacK. Scrutton, S. M. Sharples, G. I. Smart, P. McC. Sproule, J. K. Sultzberger, K. M. Swornsbourne, J. A. F. Tennant, E. E. West, G. A. Weston, Nora Wilkie, D. V. R. Williams, Annette Wynner, F. H. M. Youngusband, F. M. Westwell.

Asst. Sec. Off. (prob.) H. K. Pocock relinquishes her comm. on attaining the age limit, May 21. To resign their commns.—Sec. Offs.: May 20: C. F. Davies, June 1: E. E. Appleton, May 29: Asst. Sec. Off. J. Maclaren, Asst. Sec. Offs.: Apr. 23: M. E. Duncalf, May 26: G. Nichols, May 30: E. B. Higson, J. M. Milsom, June 1: P. A. H. Blackburn.

AMENDMENT

In notifi. of Dec. 2 concern. J. A. Copeman, for Sept. read Oct.

Air Ministry, June 16.

ROYAL AIR FORCE

The folg. are appointed Assistant Provost Marshals, May 27: Flt. Lt. G. R. Coulthard, Flt. Lt. W. G. Perkins.

The folg. are appointed Deputy Assistant Provost Marshals, May 27: Fg. Off. J. Orr, Fg. Off. M. B. Cole, Fg. Off. W. O. Carter, Fg. Off. E. A. Sorrell.

Asst. Sect. Off. D. L. Virtue (W.A.A.F.).
Asst. Sect. Off. D. L. Howard (W.A.A.F.).

Air Ministry, June 23.

ROYAL AIR FORCE

GENERAL DUTIES BRANCH.—To be Plt. Offs. on prob. (emergency):—Wt. Offs.: May: John Lawson, D.F.M., Ernest Mirfin, J. D. Benson. Flt. Sgts.: Mar.: Val Burdett, D.F.M., May: John Wallace, D.F.M., Sgts.: Mar.: D. H. Sinclair, T. H. Follett, May: D. J. Bright, Ldg. Acm.: Apr.: R. D. Robinson.

Air Cdre. C. H. K. Edmonds, D.S.O., O.B.E., to be Act. Air Vice-Msh. May.

Plt. Offs. (prob.) confmd. in appts. and to Fg. Offs. (war subs.):—C. Gies, May: A. C. Jepps (Sen. Apr. 16), J. A. P. Drummond, D.F.M., S. H. Conway, D.F.M., F. H. Fitton, J. G. McCathie, A. D. Coldicott, D.F.M., J. Holt, H. F. E. Gedde, F. B. Moss, A. J. Calvert, L. A. Rickinson, D.F.C.

Pt. Off. (prob.) E. F. W. Clarkson granted the rank of Fg. Off. (war subs.) Dec. and confmd. in appt. Jan. (Subs. for notifi. of Feb. 24).

Wg. Cdre. (temp. Air Cdre.) to be Capt. Capt. Mar. 1940:—W. Elliott, C.B.E., D.F.C., J. W. Baker, M.C., D.F.C.

Fg. Offs. to be Flt. Lts. (war subs.):—Sept., 1941: R. L. Cox, Nov., 1941: J. A. Little, D.F.C. Jan., 1942: H. A. R. Prowse, Feb.: M. C. G. Sherwood, A. J. Herford, M.B.E. Mar.: J. N. Westcott, T. F. Guest (2nd Lt. Gloster R., T.A.), P. J. Morgan (2nd Lt. 3rd Hussars), J. A. Sowrey, P. A. Clarke, M. G. Dreyer, Apr.: H. A. Seeley, G. R. Bennette, J. R. A. Careless, D.F.C., D. Y. Douglas, M. M. Mair, May: A. H. Humphrey, D.F.C., J. M. Whitwell, A.F.M., P. J. E. Ritchie, B. R. M. Wade, R. W. Atkinson (2nd Lt. Middx. R.), D. W. Barlow (Capt. R.T.R.), E. H. M. Nesbitt (Lt. K.S.L.I.), J. E. P. Walford (2nd Lt. S.V.B.), R. H. M. Anderson, J. W. E. Bridger, R. R. Drew, D.F.C., F. R. W. Palmer, I. A. Slaughter, E. A. Taylor, D.F.C., A. A. Van Der Water, E. R. Edmunds, T. L. Hogg, D.F.C., H. G. De Sloyes, June: C. N. O'Brien (Sen. May 2), E. P. S. Booker, A.F.C., H. B. Harries, L. J. T. West, C. McK. Dunciciffe, F. B. Everest, E. P. M. Fernbank, J. L. Fletcher, D.F.M., C. Holdway, A.F.C. (Sen. Apr. 25), B. B. W. Howe (Sen. May 2), J. W. Dawson, K. H. W. Dodkin (Sen. Apr. 25), C. J. Batho, A. W. Belbin (Sen. May 9).

Fg. Offs. granted the rank of Flt. Lt. (war subs.):—Nov.: D. Smith, Jan.: H. R. Allen, D.F.C., May: W. R. Greenslade, D.F.C., D.F.M., Watkins, D.F.M., A. T. Mandley, D.F.C., D.F.M.

Pt. Off. D. Smith (2nd Lt. R. Tank R.) to be Fg. Off. (war subs.), Nov.

Plt. Offs. granted the rank of Fg. Off. (war subs.):—Mar.: R. E. Williams, Apr.: W. G. Brinn, D.F.M., R. Y. Powell.

To be transf. to the Tech. Br.:—Sqn. Ldrs. (since promoted):—Apr., 1940: A. Allen, B. H. Ashton, L. P. Moore, Oct., 1940: H. G. Blair, Flt. Lts.—Apr., 1940: E. Farrett (since promoted), R. E. Meek, Fg. Off. (since promoted):—Apr., 1940: H. Stringer.

The notifi. of Nov. 4 concern. S. B. Hayes should have appeared under the R.A.F. and not the R.A.F.V.R.

TECHNICAL BRANCH.—Fg. Offs. (prob.) confmd. in appts.:—May: A. W. Lindley, J. J. Cradden.

Plt. Offs. (prob.) confmd. in appts. and to be Fg. Offs. (war subs.):—Mar.: F. D. Luke (Sen. Mar. 3), A. J. H. Holmes (Sen. Nov. 26), Apr.:

A. W. Hayes (Sen. Feb. 27), May: H. A. Warehouse (Sen. Feb. 7).

Pt. Off. (prob.) S. J. Davies, M.B.E., confmd. in appt. Dec. and to be Fg. Off. (war subs.), Mar. (Sen. Feb. 17).

Pt. Off. (prob.) R. Williams confmd. in appt. Dec. and to be Fg. Off. (war subs.), Mar. (Sen. Feb. 21).

Pt. Off. (prob.) E. J. Brandon confmd. in appt. Dec. and to be Fg. Off. (war subs.), Mar. (Sen. Mar. 3).

Pt. Off. (prob.) F. L. Payne confmd. in appt. Dec. 1 and to be Fg. Off. (war subs.), Mar. (Sen. Mar. 4).

Plt. Offs. (prob.) confmd. in appts. Feb. and to be Fg. Offs. (war subs.):—May: I. M. Ritchings (Sen. Jan. 20), G. Robson (Sen. Jan. 31), W. H. Cox, D. E. Gibbs (Sen. Feb. 1).

Pt. Off. (prob.) A. Stewart confmd. in appt. May, and to be Fg. Off. (war subs.), June (Sen. Dec. 14).

Pt. Off. (prob.) H. S. King to be Fg. Off. on prob. (war subs.) Mar. and confmd. in appt. May.

Fg. Offs. to be Flt. Lts. (war subs.):—Mar.: L. Kelly (Sen. June 26), June: W. K. Richards, M.B.E. (Sen. June 12).

Fg. Offs. granted the rank of Flt. Lt. (war subs.):—June: R. Tibbey, Aug.: J. McQ. Fitch, G. M. Macintosh.

Pt. Off. (prob.) A. F. Thompson to be Fg. Off. on prob. (war subs.) Mar.

Pt. Off. C. E. Mitchell to be Fg. Off. (war subs.), July (Sen. July 3.) (Subs. for notifi. of Aug. 29).

Pt. Off. J. E. Davies to be Fg. Off. (war subs.), June (Sen. May 30.) (Subs. for notifi. of May 23).

Act. Plt. Offs. (prob.) to be Plt. Offs. (prob.):—Oct.: C. E. Cahill (Sen. Sept. 26), Nov.: T. Smithson (Sen. Sept. 26), Dec.: A. M. Weaver (Sen. Oct. 29), Feb.: G. Garcock (Sen. Oct. 17).

May: C. W. Rogers (Sen. Feb. 20), H. G. Beales (Sen. Dec. 29), P. J. S. Jackson (Sen. Jan. 8), F. J. Bowey (Sen. Jan. 29), W. Dickson, C. A. Bennett, G. W. J. A. Hanny, J. Crawford (Sen. Feb. 5), A. E. Packman (Sen. Jan. 2), C. V. F. Wood (Sen. Jan. 8), C. A. H. Cooper (Sen. Jan. 15), G. R. Wood (Sen. Jan. 23), A. P. Buckley, D. E. Ward, A. V. Eynon (Sen. Jan. 29), F. E. R. Webb (Sen. Feb. 10), E. G. Revell (Sen. Mar. 3), H. G. Rowe (Sen. Mar. 21), D. R. Levinson, M.B.E. (Sen. Nov. 21), G. Oversby (Sen. Dec. 4), H. H. Wardell (Sen. Feb. 13).

AMENDMENTS.—In notifi. of July 18 concern. Wt. Off. A. E. Ward, for Fg. Off. read Plt. Off.

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Fg. Off. (prob.) C. Dewar confmd. in appt. Mar.

Pt. Off. (prob.) J. Billington confmd. in appt. Apr. and to be Fg. Off. (war subs.), Apr. (Sen. Mar. 27).

Pt. Off. (prob.) J. R. Williams confmd. in appt. Apr. and to be Fg. Off. (war subs.), May (Sen. Apr. 1).

Plt. Offs. (prob.) confmd. in appts. Apr. and to be Fg. Offs. (war subs.):—May: B. Dill (Sen. Apr. 2), J. S. J. Buels (Sen. Apr. 15), E. C. Millett (Sen. Apr. 18).

Pt. Off. (prob.) E. W. Roylance confmd. in appt. and to be Fg. Off. (war subs.), June (Sen. May 20).

Pt. Off. (prob.) H. B. Brent to be Fg. Off. on prob. (war subs.) May and confmd. in appt. May (Subs. for notifi. of May 26).

Act. Plt. Offs. (prob.) to be Plt. Offs. (prob.):—June: R. Greasley (Sen. Nov. 29), G. W. Hilary-Collings (Sen. Apr. 2), L. R. Flower, M.M., A. J. T. Bridgland (Sen. Apr. 16), B. W. Ahern (Sen. Mar. 7).

Act. Plt. Off. (prob.) D. W. Fraser to be Plt. Off. (prob.) Oct. (Sen. Sept. 17.) (Subs. for notifi. of Oct. 21 and Nov. 18).

Fg. Off. G. E. Williams is transf. to the Tech. Br. Apr. 9.

The notifi. of June 2 concern. F. K. Smith should have appeared under R.A.F. and not R.A.F.V.R.

EQUIPMENT BRANCH.—Plt. Off. (prob.) T. A. Simons to be Fg. Off. on prob. (war subs.), May.

ACCOUNTANT BRANCH.—Fg. Off. F. J. Allan to be Plt. Lt. (war subs.) Apr. (Sen. Dec. 21).

AMENDMENTS.—In notifi. of Dec. 23 concern. Wt. Off. G. Gilmore for Act. Plt. Off. read Fg. Off.

In notifi. of Dec. 30 concern. Wt. Off. J. V. McCormack for Act. Plt. Off. read Plt. Off.

MEDICAL BRANCH.—To be medical Offs. (emergency) with the relative rank of Fg. Off. for employment with the R.A.F.—The Hon. P. L. F. Acland-Hood, M.R.C.S., L.R.C.P.; Miss A. B. Cruikshank, M.B., Ch.B.; Mrs. M. S. T. Logan, M.B., Ch.B.; Mrs. P. P. Pigott, M.B., B.S.; Mrs. E. M. D. M. Scott, M.B., Ch.B.; Miss W. J. Symington, M.B., Ch.B.

Miss K. E. A. Smith, M.B., B.Ch., Medical Off. with the relative rank of Fg. Off., is promoted to the relative rank of Flt. Lt. (war subs.), May.

The folg. Gp. Cpts. (retd.) who have continued to be employed on the active list in their present rank now relinquish that rank at their own request, and assume that of Wg. June 1:—R. A. G. Elliott, M.B., B.Ch., D.P.H.; R. J. Aherne, M.C., L.C.C.P. and S.; T. Montgomery, M.D., B.Ch., D.P.H.

ROYAL AIR FORCE REGIMENT.—To be Fg. Offs. on prob. (emergency), Mar. (Sen. Dec. 24):—Wt. Offs.: G. E. Elliott, H. D. Ward.

To be Plt. Offs. on prob. (emergency), Mar. (Sen. Dec. 24):—Wt. Offs.: R. N. Gibby, Allan Stevenson, A. B. Jereat, Flt. Sgts.: S. H. Harvey, Montague Hadley, W. E. Rogers, Sgt.: J. H. Bugg.

RESERVE OF AIR FORCE OFFICERS

GENERAL DUTIES BRANCH.—June: G. V. Pickering to be Flt. Lt. in class CC. May: R. M. Little to be Plt. Off. in class CC.

Fg. Off. (since promoted) D. B. Smith is transf. to the Tech. Br. Apr. 24, 1940.

Sen. Ldr. R. C. White is transf. to the Admin. and Spec. Br. Apr. 11, 1940.

Flt. Lt. (temp. Sqn. Ldr.) Donald Marshall relinquishes his comm. on appt. to a comm. in the R.A.A.F.R. May 11.

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Flt. Lt. J. P. Redmond is transf. to the Gen. Duties Br. Mar. 25. Flt. Lt. L. A. W. Deane is transf. to the Tech. Br. Apr. 25.

ROYAL AIR FORCE VOLUNTEER RESERVE

GENERAL DUTIES BRANCH.—To be Plt. Offs. (emergency):—Apr.: P. F. Lockyer, Terence Lundholm.

To be Plt. Offs. on prob. (emergency):—Wt. Offs.: May: J. R. Carruthers, A. J. Lane, R. N. H. Wherrett, Temp. Wt. Offs.: May: J. L. Anderson, Dennis Beers, Reginald Ivey, Act. Wt. Off.: May: D. H. Rowlands, Flt. Sgts.: Mar.: G. B. D. Greenwood, J. B. Underwood, May: G. W. Evans, William Kemp, F. J. Grewe, R. D. Meihren, V. J. Reed, F. W. Andrews, J. H. Bowdswell, W. H. Martin, G. E. Addy, J. W. Barling, Denis Nichol, A. W. Raybould, E. S. Shepherd, Percival Wallace-Pannell, R. F. Tiley, W. E. Armstrong, Arthur Boote, J. W. Ditzel, A. G. Olley, A. C. Shilleto, Temp. Flt. Sgts.: Jan.: F. B. Green, Apr.: G. L. Shackleton, May: V. J. D. Baker, J. W. Caddie, L. A. Dwen, D. A. Welch, A. W. Cameron, G. D. A. Rignall, W. B. Rogers, Harold Evans, W. Medun, Sgts.: July: D. H. Grindley, Sept.: A. E. Mulhall, R. C. Eldridge, H. P. Rose, P. MacD. Sheppard, A. M. Stewart, Nov.: R. G. MacInnes, G. G. Rogers, R. O. Sturgess, Lawrence Dixon, G. R. Plumb, S. G. Creasey, Dec.: W. C. Riches, I. H. Stevenson, S. D. Read, Charles Mason, Jan.: A. D. Mack, F. D. W. Greatrex, R. A. Ayres, J. W. Roll, T. C. Vigors, W. G. Walker, A. W. Walledge, R. K. Cooper, J. P. Crose, W. M. Goulding, John Cuddeford, H. R. Mathews, E. R. Muller-Rowland, R. M. Powell, A. A. F. Robins, R. L. West, J. O. Lascelles, Eric Lindsey, L. E. Thompson, J. R. Welton, C. F. Williams, Feb.: Dudley Roberts, W. F. C. Rushton, J. A. Wagstaff, T. L. Higgins, L. S. Andrews, V. G. Brewis, G. C. Cave, S. J. Cornes, W. A. Gregory, G. E. Palmer, R. J. Reid, William May, N. A. Lavers, N. H. Oakley, J. C. Cunnings, J. W. Pascoe, D. H. Thornton, H. S. F. Daborn, A. C. Cons, S. J. Elphick, Frank Mayes, Harold North, R. G. Goodwin, R. V. Godfrey, P. R. Griffin, A. E. Steward, G. A. D. Gordon, S. M. Sheret, W. F. Williams, A. F. S. Storey, D. W. Taylor, Mar.: D. J. Ashworth, S. G. Bishop, G. H. Curtis, G. F. Drake, E. A. Waygood, E. A. Whitmore, A. G. Croxton, M. W. Moore, D. A. Clifton-Mogg, F. A. Collins, D. J. Cremer, J. P. Cunningham, R. N. Emmett, Robert Russell, L. A. Sanderson, R. K. Raby, G. C. Robinson, G. D. Stephenson, E. B. H. Woolley, Lionel Parsell, P. N. Harris, E. T. D. Lees, M. H. Good, E. L. Harris, L. V. King, J. L. Suddaby, T. M. Catterback, H. W. Cline, S. V. Gorton, James Hough, L. T. Johnson, W. J. Goby, Joseph Harrigan, R. J. Lilwall, J. P. Bassett, Vernon St. John, A. E. Sloman, P. F. Smith, J. V. Stuart-Pearce, J. C. Giff, J. R. P. Taylor, R. W. Evans, Alexander Glover, Kenneth Halstead, Cyril Harries, I. A. Jones, J. R. Jones, J. A. Keeling, B. H. Kenwright, D. C. H. Simmons, D. O. Street, J. R. Sutton, J. H. Taylor, E. C. Thyer, Neil Smart, E. G. Searle, R. E. Symonds, A. G. Oliver, P. F. Willis, E. L. G. Ratcliffe, E. K. M. Runcables, P. F. Clayton, S. J. Colman, E. D. Cooper, E. M. Cumming, P. S. Engelbach, D. R. Harding, W. J. H. Holmes, Sydney Hosking, Robert Franks, D. A. Gibb, J. R. Lewis, James Nixon, Ronald Leonard, A. A. St. Clair Miller, John Hardy, John Keddie, G. S. Moss, E. A. Perry-Knox-Gore, R. A. Clarke, K. J. Coxhead, W. E. L. Fletcher, R. H. Gould, David Knightly, Eric Garner, G. A. King, K. W. Nicholson, Apr.: R. P. Wright, W. C. Case, W. G. Kelly, L. T. Land, D. R. Popkin, A. G. Taylor, W. W. King, J. L. Livingston, Arnold Musto, E. A. Primrose, G. Wallis, V. W. Whitten, W. B. Keown, B. E. Scott, S. H. Walpole, May: A. McK. Gall, J. A. G. Jackson, D. J. Smith, D. M. Bell, A. S. Burridge, E. W. C. Dixon, A. W. J. Evans, R. D. Graesser, F. C. Guilmant, Ronald Hartley, G. V. Jelly, W. H. W. Lucas, C. L. Moody, C. L. J. Patten, Charles Pretzlik, F. W. Price, C. M. Rostron, A. McA. Elliott, J. H. Knowling, J. B. Lawrence, Philip Gruchy, E. P. McDevitt, K. E. Bryceson, A. V. Fry, P. J. Banbury, K. E. Bryceson, A. V. Fry, P. J. Banbury, Cpls.: Mar.: I. G. M. Gould, E. I. Griffiths, F. H. Ellis, E. L. Williams, Apr.: F. W. Fennell, Ldg. Acm.: Jan.: E. F. Atkins, G. J. Lane, D. F. Smith, T. G. Thompson, K. G. Gray, William Wright, Feb.: S. W. A. Gibbs, A. N. H. Tustain, E. G. Clegg, J. A. Fielding, Mar.: W. A. Giddon, H. L. Fenn, Eric Francis, Haydn Rees, J. S. Smyth, M. A. Khan, F. W. W. Chandler, E. O. Hampshire, W. A. Hinselwood, J. H. Kinsey, J. S. Lang, R. H. Larkins, H. W. Adams, K. G. V. Brown, E. A. C. Dawkins, Edward Gatis, F. G. Gibbs, R. A. Bingham, F. W. Dennison, G. H. McMillan, W. G. Rogers, R. D. Turk, Edgar Whitaker, C. E. Whitnell, Gerald Goodman, R. S. Griffin, Paul Riches, E. D. Gunston, W. C. Sterling, P. S. Cunningham, R. L. Gunston, W. C. Sutton, Apr.: E. H. M. Patterson, R. G. Miller, F. T. Muehad, J. M. Rankin, W. D. Wright, E. W. C. Scott, R. K. Simmons, Robert Shankland, K. J. Larby, J. C. Martin, R. E. G. Sheward, A. G. Barden, S. W. C. Holland, R. C. Cooper, W. R. M. Lindsay, P. G. Bailey, B. E. Bell, John Campbell, F. A. Dismore, R. H. Gillham, T. A. Lever, C. D. Marshall, H. H. Monks, May: R. A. Ainslie, A. G. Edwards, R. W. Harrison, F. G. R. Jelfries, P. F. Whitley, E. J. Scott.

Plt. Offs. (prob.) confmd. in appts. and to be Fg. Offs. (war subs.):—Oct.: W. H. Holland, J. R. Scott, Nov.: M. C. W. Ormond (Sen. Nov. 5), Feb.: P. S. Patterson, Mar.: H. Liley, M. J. M.

K.L.G.

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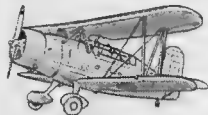


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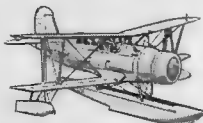
*Since the Birth of
Aviation*



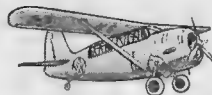
1926 - The Curtiss Falcon—O-1. First plane designed specifically for observation tasks and purchased in large numbers by the United States Army. Powered by D-12 engine.



1935 - The SOC-1, built for the United States Navy, shown here with land gear. Folding wings made it adaptable to limited storage space.



1937 - SOC's of this type, equipped with a single float and balancing wing tip pontoons, were placed aboard every battleship and cruiser of the United States fleet, the first model to achieve this distinction. They were launched by catapult.



1942 - The O-52, latest Army observation. High wing monoplane, excellent for vision. Slots and flaps make operation from small fields possible.

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Fig. Offs. to be Flt. Lts. (war subs.):—Nov.: I. L. W. Clancey, M.R.C.S., L.R.C.P. Jan.: P. Citron, M.B., Ch.B.; C. W. Hutt, M.B., Ch.B., M.R.C.S., L.R.C.P. Feb.: J. K. Swanson, L.R.C.P. and S., L.R.F.P.S. Mar.: I. W. H. R. Cran, M.R.C.S., L.R.C.P. Apr.: D. S. Grant, M.R.C.S., L.R.C.P. May: S. Duff, M.B., Ch.B.; G. O. Rosenvinge, M.B., B.S.; R. W. Grayburn, M.B., B.S.; I. D. Macintyre, M.B., Ch.B.; H. A. Rowley, M.B., B.S., M.R.C.S., L.R.C.P.; R. A. Trevelthick, M.B., Ch.B.

AMENDMENT.—In notifn. of Feb. 17 concern. Fig. Off. J. Jacobs, for M.R.C.P. read M.R.C.S.

DENTAL BRANCH.—To be Flt. Offs. (emergency):—May: J. M. Clark, L.D.S.; A. K. Green, L.D.S.; J. J. Sanders, L.D.S.; A. G. Thom, L.D.S.; K. V. Thompson, L.D.S.; G. M. Woolford, M.R.C.S., L.R.C.P., L.D.S.

Fig. Offs. to be Flt. Lts. (war subs.):—May: J. W. Wright, L.D.S.; M. C. Cowan, B.D.S.; J. L. Clark, L.D.S.; G. F. Power, L.D.S.; N. A. Burnett, L.D.S.; H. E. Clark, L.D.S.; G. H. Mason, B.D.S.; G. A. Edwards, H.D.D., L.D.S.; R. E. Eyles, L.D.S.

CHAPLAINS BRANCH.—To be Chaplains (emergency) with the relative rank of Sqn. Ldr.:—May: The Rev. A. A. Hamilton, M.A., B.D.; The Rev. A. G. Barker, M.A.; The Rev. R. J. Davies, B.A.; The Rev. L. A. Gibson, B.A.; The Rev. W. N. Metcalfe, B.A. June: The Rev. J. C. Armes, B.A.; The Rev. E. W. Daly, The Rev. A. W. Holmes, The Rev. J. J. Kennedy, The Rev. John Marquis, The Rev. J. P. O'Meara.

ROYAL AIR FORCE REGIMENT.—L. J. Gibbons to be Sqn. Ldr. on prob. (emergency), Apr. B. J. King to be Flt. Off. on prob. (emergency), Apr.

To be Plt. Offs. on prob. (emergency), Mar. (Sen. Dec. 24):—Wt. Off.: H. S. E. Toogood. Flt. Sgts.: Waverley Cameron, E. F. Beard, J. C. Harper, E. D. Holmes, L. F. Hook, C. O. Wright, Foster Shanks, L. C. Steele, W. L. Sinclair, L. W. Thompson. Act. Flt. Sgts.: John Bell, A. G. Walls. Sgts.: Thomas Dun, Roy Culver, Lawrence Hamer, J. A. Greely, W. E. Evans, E. S. Eades, G. H. Lucas, L. J. Cockwood, C. B. R. Murdie, Kenneth Mosley, T. S. McGeorge, E. J. Duignan, E. B. Howe, W. R. Spencer, James Huggins, Edward Southey, William Ward. Act. Sgt.: John Leadbetter. Cpls.: Thomas Cleland, L. F. Dodson, A. R. Danks, Morton Danby, G. A. Crosby, L. E. Cowell, L. A. Childs, R. W. H. Charles, E. W. Harding, A. A. Halliday, K. B. Greenhill, J. A. George, S. A. Fisher, G. R. Evans, F. M. Edwards, L. E. R. Dunkin, H. L. Howard, R. A. Hise, M. F. Hobden, P. H. Hayward, W. S. Harvey, C. W. Harrison, R. A. Burgess, R. F. Bride, A. A. Bradley, L. L. Bloomfield, A. F. Barber, J. A. Bairner, R. J. Logan, H. A. Lindley, F. R. R. Lennon, T. A. Lee, R. A. Aitken, C. F. E. Murray, A. F. F. Mellows, H. J. Mann, H. P. Kinchett, R. F. Walker, S. V. Kennedy, E. J. Kennedy, E. P. De C. Blackmore, J. O. Lambert, D. K. Ludley, Thomas Nicholson, Augustus Potts, Jack Percy, L. N. Parlett, Reavley Oswald, Alfred O'Reilly, S. C. E. Norris, A. S. Thomas, A. J. Orbell, S. R. Selick, C. A. K. Scott, R. M. Riley, R. D. Williams, W. M. Thompson, Jack Thorp, D. A. W. Stewart, Kenneth Stuart-Hart, Kenneth Tanfield, Joseph Shaverin, Claude Wilkinson, T. W. Williams, C. E. Wortley, H. T. Humphreys, R. A. Hudson, Herbert Palin, A. S. Conroy. Act. Cpls.: J. M. Bates, Arthur Kenny, L. A. Steen, E. C. McCarthy. Ldg. Acn.: D. St. J. Courtney, W. N. Gates, A. F. Hastron, W. Le M. Brown, N. P. Bray, G. W. M. Bernau, D. E. Barnett, D. J. P. Llewellyn, F. G. V. Arman, T. B. Newton, T. A. Nevison, E. S. Marks, J. P. Manser, S. A. Taylor, G. F. Keech, C. M. James, Sydney Ireland, A. W. Richardson, Alan Yates, G. W. Leadbeater, S. I. P. Williams, D. S. Hunt, T. B. Tustian, L. N. Mason. Acn. 1st Cl.: W. T. Garratt, Cyril Higgins, D. O. P. M. Harrison, J. A. Boulton, Peter Godfrey, Herbert Best, E. P. Nicholls,

Andrew Smith, A. R. C. Kirby, I. R. Mackinnon, A. G. Onley, J. W. Shales, T. N. Thompson, D. E. Singleton, E. B. H. Mansfield, Acn. 2nd Cl.: S. B. Cooper, S. S. Cohen, F. W. Eggington, R. G. Bentley, A. E. M. Lawsey, E. F. J. Agnesetti, C. B. Marshall, R. G. E. Halls, J. C. Snowden, John Hudson, J. R. Sayers, Reginald Timmings, R. R. Smart, R. T. C. Wade, Norman Turnbull, F. A. Avar, J. S. D. Hyslop, R. F. Ramage.

AUXILIARY AIR FORCE

GENERAL DUTIES BRANCH.—Fig. Offs. to be Flt. Lts. (war subs.):—L. H. Casson, Dec. C. J. Mackenzie, May. Sqn. Ldr. R. A. Clay transf. to the Tech. Br., June 13. Sqn. Ldr. A. S. Johnson is transf. to the Admin. and Spec. Duties Br., Dec. 1.

WOMEN'S AUXILIARY AIR FORCE

To be Asst. Sec. Offs. on prob. (emergency):—June: L. D. M. Ballance, M. J. Bickerton, Judith Bradley, M. E. C. Brooks, A. V. Burkill, R. G. Candler, M. F. P. Chapman, R. E. M. Coates-White, Mary Edwards, V. M. Foulston, B. I. Gibbs, V. J. Goodman, Elsie Gwilt, J. McN. Holman, Ruth Holt, M. L. Ledward, M. M. Lewis, E. M. Lofthouse, Beryl Mayou, K. J. Norman, E. M. O'Donoghue, J. M. H. Pedley, J. M. Pinnick, M. D. Pinnington, N. J. Ray, E. W. Rose, R. E. M. Rowe, M. E. Sharland, H. S. Smith, J. H. Swift, M. J. Tuck, M. L. Wallis, P. B. Ward, J. L. Allen, A. F. Angel, J. E. Anson, G. H. Barber, P. M. Batchelor, M. W. Bateman, J. P. Bentley, D. F. Blackham, J. M. L. Bowser, A. N. Brailey, G. M. C. C. Bray, D. E. Brice, E. M. C. Brown, P. M. C. Burke, L. M. Buschi, I. M. Byrne, H. C. C. Calder, S. P. Chapman, A. V. Chubb, E. C. Collett-Jones, J. M. Corrigan, H. J. C. Davis, M. J. Delph, E. L. Denny, H. V. Dolt, M. M. Foulger, E. K. Gay, A. W. M. Gray, M. E. Hack, Sarah Heasley, H. E. K. Hill, D. W. Hilton, B. M. I. Jones, C. E. Jones, O. M. Jones, J. W. Lovett, J. L. McMillan, Joan Mansfield, O. L. Marshall, P. M. P. Marten, I. J. Marsingall-Thomas, B. B. Miskely, S. M. Mogg, J. A. Mouat, M. G. Neill, S. M. Newman, Lucy Nimmo-Watson, A. H. Orr, W. L. Pain, R. M. J. Pellow, M. H. Phillips, U. D. Phillips, B. E. Powell, M. H. Powell, Joan Prowse, E. M. Seargent, P. W. Scotchbrook, J. M. Shaw, J. F. Sheldon, M. E. Stewart, S. Mack. Strachan, G. M. Taylor, Mildred Thomas, D. A. Thompson, U. M. Thorne, J. A. Tod, K. M. Townsend, B. J. Vaughan, D. J. Wailes-Fairbairn, D. M. Wallwork, B. E. Ware, E. P. E. Webb, R. G. I. Weigall, D. J. M. Williams, H. V. D. Witherington, J. G. A. Witherington, Margaret Maclean.

Asst. Sec. Offs. (prob.) confmd. in appts.:—Feb.: P. G. Clancy. Mar.: M. F. Angus, E. Carlton. Apr.: P. M. Heath, J. Surrey Dane, T. A. Fitzgerald, D. Mackey, M. B. Parsons, J. M. Spencer, A. V. Stanley, R. Westlake-Wood, J. E. Eades, A. G. Wilson. May: F. A. Harland, D. M. Holman, R. B. Alcorn, M. H. Ballantyne, D. P. Black, J. K. H. Cutts, E. J. Folkes, H. M. Hamilton, K. M. Hampson, M. Holliday, R. E. Horstman, H. L. Howard, N. B. Hume, A. G. Hunter, S. F. Ingleby, C. M. Mitchell, M. P. O'Brien-Ryan, Hon. G. E. C. O'Brien, Pemberton, E. V. Riddle, M. E. Taylor, B. M. Wardle, A. H. Wilson, S. T. Adam, E. D. Brown, S. E. Cameron, P. Liddell, J. L. C. Rayner, K. I. B. Chisman, J. Colston, J. B. Fleet, E. M. Reay, J. A. Perley, R. Andain, D. G. Fry, S. Pyffe, I. S. Webster, A. P. Prentiss, M. S. Thatcher, Q. F. Green, M. E. Rowbottom, M. C. Rylands.

Sec. Off. E. A. G. Lywood to be temp. Flt. Off., Mar.

Asst. Sec. Offs. (prob.) resign their comms. on account of ill-health:—K. Townson, June 6. G. M. Mahoney, June 7.

Asst. Sec. Off. (prob.) O. J. Miller resigns her commn., June 3.

Air Ministry, June 30.

ROYAL AIR FORCE

GENERAL DUTIES BRANCH.—To be Plt. Offs. on prob. (emergency):—Wt. Offs.: Jan.: T. V. Whaling. May: H. J. Archer-Crump, D.F.M., E. J. A.

Stephenson. Temp. Wt. Offs.: May: R. T. Martin, D. W. Owen, N. H. Shepherd. Flt. Sgts.: May: L. R. Aust, T. R. Bishop, William Gallagher. Temp. Flt. Sgt.: May: K. P. Hunning. Sgts.: Dec.: G. K. W. Newton. Feb.: R. H. Hebbourn. Apr.: T. C. Gould. May: S. J. Jordan, R. C. Emberton. Ldg. Acn.: Jan.: John Whitaker. Mar.: Ronald Isherwood.

Fig. Off. (prob.) F. J. Poulter confmd. in appt. Dec., and to be Flt. Lt. (war subs.), May.

Plt. Offs. (prob.) confmd. in appts. and to be Fig. Offs. (war subs.):—May: P. G. J. Cranley, J. Turpin, G. L. Maxton, S. Park, F. Sumner, W. B. Cowman, L. W. Ward, L. A. Wells, R. A. Cooper, G. S. McGaw, F. M. Burton, H. J. Rayner.

Fig. Offs. to be Flt. Lts. (war subs.):—Mar.: A. L. Davis (Lt. R.E.T.A.). Apr.: R. Armstrong, D.F.C., R. W. Brown, W. G. Gardiner, D.F.C., E. M. Gibbs, A. W. Hall, H. J. Hartland, D.F.C., K. G. Laverack, J. Atkinson, A. G. Maycock, J. N. Bethell, A. P. Cranswick, D.F.C., R. N. Alcock (2nd Lt. R.E.T.A.), O. D. B. Coe (2nd Lt. Cheshire R. T.A.), A. B. Chalkley, A. Hindley, P. Morcom, W. H. Dunne, B. H. McMichael. May: J. H. B. Keates, H. R. Pooley, G. E. Cruwys, A. P. Q. Buet (2nd Lt. R.T.R.), E. Chegwin (Lt. D.G.L.I.), B. P. W. Chapin (2nd Lt. R.E.), A. N. Davis (2nd Lt. R.E.), J. B. A. Fleming (2nd Lt. R.A.), D. G. Harley (2nd Lt. A. and S.I.I.), P. D. Morris, H. G. Munro (2nd Lt. R. Scots), J. H. Leland, E. O. Richards, J. M. Rumsey, R. H. Dihnah. June: D. A. Payne, F. T. Roberts, S. D. Harvey (Sen. May 9), J. N. Owen (Sen. May 2), G. E. Llylwhite, A.F.C. (Sen. May 3), C. H. Richardson, D.F.C. (Sen. May 30), J. E. Austin (Sen. May 9), G. C. Brunner, A.F.C. (Sen. May 2), T. W. Newbould, A.F.C. (Sen. May 9), A. G. Blagden (Sen. May 9), R. A. Collis, D.F.C. (Sen. May 2), A. Leitch, K. J. Plested (Sen. May 9), D. B. Clifford (Sen. May 30), H. Gandy, D.F.C. (Sen. Apr. 25), A. Reece, D.F.C. (Sen. Apr. 25), R. Hewitt (Sen. Apr. 25).

Fig. Offs. granted the rank of Flt. Lt. (war subs.):—Mar.: L. F. Penny. Apr.: C. N. S. Campbell, D.F.C. May: W. M. Collins, D.F.C.

Plt. Off. (prob.) V. L. Fisher to be Fig. Off. on prob. (war subs.), Apr. 1.

Plt. Offs. granted the rank of Fig. Off. (war subs.):—Apr.: A. Cody, D.F.M., A. Seymour. June: H. C. Morris, G.M.

Air Mshl. (act. Air Chief Mshl.) Sir Charles Burnett, K.C.B., C.B.E., D.S.O., ceases to be seconded for Special Duty, June 4.

The folg. cease to be seconded for Special Duty. Apr. 4: Fig. Off. R. A. R. Falconer, Plt. Off. A. E. Carpenter.

Fig. Off. E. L. Davies relinquishes his commn. on account of ill-health and retains his rank. June 17.

Plt. Off. A. C. Worrall (2nd Lt. Devon R.) relinquishes his temp. commn. on return to Army duty. May 16.

Flt. Lt. J. D. Towison resigns his short service commn. June 8.

TECHNICAL BRANCH.—To be Fig. Offs. on prob. (emergency):—Wt. Offs.: Dec.: H. F. Blackburn (Sen. June 9). Feb.: J. D. S. Rogers (Sen. July 31). Apr.: Wilfred Mann (Sen. Jan. 1), S. G. Brown (Sen. Mar. 1), E. J. Essam (Sen. Mar. 24). May: P. H. Chinnock (Sen. Mar. 24), William Parker (Sen. Mar. 15), A. E. Graddage (Sen. Apr. 21), W. F. Wilson (Sen. Dec. 17), R. A. Noble (Sen. Apr. 1), F. J. Mullins (Sen. Dec. 2).

To be Plt. Offs. on prob. (emergency):—Wt. Offs.: Jan.: W. H. Coast (Sen. Oct. 30), K. A. Bennett (Sen. Nov. 13), Edwin Oxley (Sen. Dec. 9). Feb.: G. F. W. Newman (Sen. Sept. 23), E. F. Withington (Sen. Jan. 6), S. P. Ray (Sen. Jan. 14), S. G. Pereira (Sen. Nov. 13). Apr.: D. C. Kissick (Sen. Apr. 1), S. J. Woods (Sen. Dec. 8), J. R. Ross (Sen. Apr. 1), G. E. W. Squirrel (Sen. Mar. 31). May: J. G. Rutter (Sen. Apr. 1). Act. Wt. Offs.: Mar.: L. A. F. Newman (Sen. Mar. 2). Apr.: L. W. Durrant (Sen. Apr. 1). Flt. Sgts.: Jan.: A. E. Taylor (Sen. Dec. 11). Feb.: F. A. Rosam (Sen. Dec. 18), R. H. McCullough (Sen. Feb. 5), R. A. Coleman (Sen. Feb. 5). Mar.: Albert Mercer (Sen. Jan. 26), T. H. Pitcairn-Hill (Sen. Jan. 29), W. J. Thomas (Sen. Feb. 20). Apr.: Henry Constable (Sen. Mar. 24).

(The rest of the appointments under this date will be published next week.)



DESERT BOMBERS.—Bostons of the South African Air Force off to bomb transport in the Western Desert.

AEROPLANES OF THE JAPANESE ARMY AND NAVY AIR FORCES—XI

THE T.G.D. T.R.1

(Two 240 h.p. T.G.D. Jimpu 5A motors)

TYPE.—Transport.

CREW.—Two and four passengers.

DIMENSIONS.—Span, 47 ft. 11 ins.; length, 34 ft. 9 ins.; height, 9 ft. 0 in.; wing area, 269 sq. ft.

WEIGHTS.—Empty, 3,014 lb.; loaded, 5,500 lb.

PERFORMANCE.—Max. speed, 180 m.p.h.; range, 1,120 miles at 155 m.p.h.; ceiling, 19,680 ft. Made by Tokyo Gasu Denki Kabushiki Kaisha (Tokyo Gas and Electrical Engineering Co., Ltd.) at Ohmori, near Tokyo.



61

THE T.G.D. KOKEN

(One 800 h.p. Kawasaki motor)

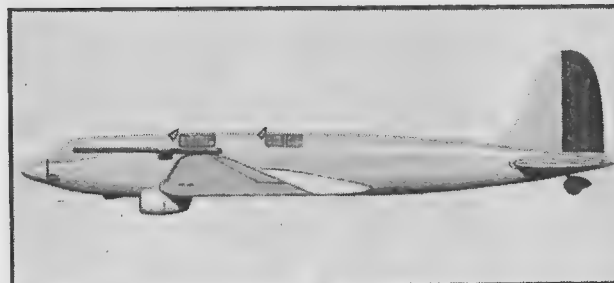
TYPE.—Long-range monoplane.

CREW.—Three.

DIMENSIONS.—Span, 91 ft. 9½ ins.; length, 49 ft. 2 ins.; height, 11 ft. 9 ins.; wing area, 936 sq. ft.

WEIGHTS.—Empty, 7,840 lb.; loaded, 20,950 lb.

PERFORMANCE.—Max. speed, 133.5 m.p.h. Built for the Imperial Institute of Japan, the Koken, named Winds of the Century, in 1938 broke the long-distance closed circuit record with a flight of 7,327 miles at 116 m.p.h. Made by Tokyo Gasu Denki Kabushiki Kaisha (Tokyo Gas and Electrical Engineering Co., Ltd.) at Ohmori, near Tokyo.



62

THE AICHI NAVY K-99

(One Aichi radial motor)

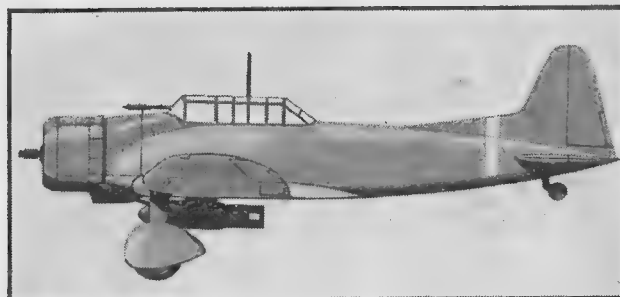
TYPE.—Dive bomber.

CREW.—Two.

ARMAMENT.—Two fixed forward-firing machine-guns and one or two movable rear machine-guns.

DIMENSIONS.—Span, 48 ft. 0 in.; length, 37 ft. 0 in.

No other details available for publication. Made by Aichi Tokei Denki Kabushiki Kaisha (The Aichi Watch and Electric Machinery Co., Ltd.) at Nagoya, apparently from Mitsubishi designs. Used at Pearl Harbour.



63

THE DOUGLAS DC-2

(Two 710 h.p. Wright Cyclone motors)

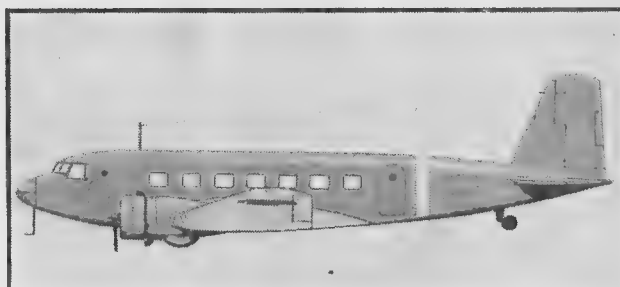
TYPE.—Transport.

CREW.—Three and fourteen passengers.

DIMENSIONS.—Span, 85 ft. 0 in.; length, 61 ft. 11¼ ins.; height, 16 ft. 3¼ ins.; wing area, 939 sq. ft.

WEIGHTS.—Empty, 11,880 lb.; loaded, 18,560 lb.

PERFORMANCE.—Max. speed 212 m.p.h.; range, 1,085 miles at 200 m.p.h.; initial climb, 1,090 ft. per min.; service ceiling, 23,600 ft. Made by The Douglas Aircraft Company, Inc., and in Japan by Nakajima Hikoki Kabushiki Kaisha (Nakajima Aircraft Co., Ltd.) at Ohta, Gumma-ken.



64

THE DOUGLAS DC-3

(Two 1,000 h.p. Wright Cyclone motors)

TYPE.—Transport.

CREW.—Three to four and twenty-one passengers.

DIMENSIONS.—Span, 95 ft. 0 in.; length, 64 ft. 5½ ins.; height, 16 ft. 11½ ins.; wing area, 987 sq. ft.

WEIGHTS.—Empty, 16,398 lb.; loaded, 25,200 lb.

PERFORMANCE.—Max. speed, 219 m.p.h. at 7,700 ft.; range, 1,620 miles at 196 m.p.h.; initial climb, 1,200 ft. per min.; service ceiling, 21,900 ft. Made by The Douglas Aircraft Company, Inc., and in Japan probably by Nakajima Hikoki Kabushiki Kaisha (Nakajima Aircraft Co., Ltd.) at Ohta, Gumma-ken.



65

THE LOCKHEED 14

Burbank (believed known as the WG.3)

(Two 820 h.p. Wright Cyclone motors)

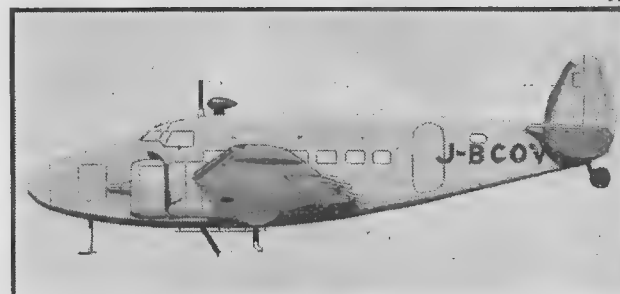
TYPE.—Transport.

CREW.—Three and twelve passengers.

DIMENSIONS.—Span, 65 ft. 6 ins.; length, 44 ft. 2½ ins.; height, 11 ft. 5½ ins.; wing area, 586 sq. ft.

WEIGHTS.—Empty, 11,025 lb.; loaded, 17,500 lb.

PERFORMANCE.—Max. speed, 257 m.p.h. at 9,300 ft.; range, 1,705 miles at 205 m.p.h.; service ceiling, 24,700 ft. Made by The Lockheed Aircraft Corporation, Cal., U.S.A., and possibly by a Japanese company.



ROCKET BOMBS

USE BY THE RUSSIANS of rocket aeroplane bombs has directed attention to a type of projectile about which little has been said in this country. A rocket bomb is one which contains, in addition to its high explosive charge, a propellant charge which is ignited when the bomb is launched. This produces gases which are discharged at the tail end of the bomb to produce a propulsive reaction on the air similar to that which propels an ordinary rocket. This propulsion naturally increases the velocity of the bomb in the direction of its projection, and, therefore, any component of such velocity in the downward direction will add to the gravitational falling speed of the bomb.

An ordinary gun propellant or explosive cannot be used as a rocket propellant charge because the development of gases and pressure is practically instantaneous, whereas in the case of a rocket the reaction thrust must be developed for an appreciable period after the launching or firing of the rocket or projectile. This means that the combustion of the propellant must take place more or less gradually and progressively. Thus, apart from other considerations, the choice of a suitable rocket charge demands careful attention.

A further important point is that the reaction thrust produced should be constant, so that the flight of the rocket projectile is not fortuitous, but is predictable with a reasonable degree of accuracy. This means that the rate of discharge of gases must be constant and therefore the rate of burning of the propellant must be constant. Since the rate of burning is proportional to the pressure, provision must be made for maintaining a constant pressure of the gases to preserve a constant rate of burning and hence a constant reaction thrust.

An immediate result of increased falling speed is the increase of impact velocity, so that with downward rocket propulsion bombs can be dropped from a relatively low height at a speed which could only be obtained normally by dropping from a great height. Dropping from a great height must necessarily tend to be inaccurate in comparison with dropping from a low height. The time of flight is also much longer, which necessitates the bomb being dropped when the aeroplane is much farther from the target in a horizontal plane, with consequent increase of the opportunity for the target to take avoiding action.

Thus rocket bombs will permit attacks to be made with a high degree of accuracy and with impact velocities normally only attainable by dropping from a great height. Furthermore, the greater the downward velocity the more will the line of flight tend to be in a straight line coinciding with

the line of sight, which is a factor contributing towards greater accuracy in bombing.

If a straight line of bomb flight coincident with the line of sight were possible, accurate bomb aiming could be done as soon as the aeroplane was put into flight along that line. Equal accuracy would be obtained by releasing the bomb at any point along that line, so that there would be line release, as against point release in the case of normal bombs, which, because of their curved trajectory, must be released at a definite point in that trajectory in order to strike the target aimed at.

The rocket bomb would therefore appear to possess great possibilities for use in attack against heavily armoured ships, concrete gun emplacements and tanks, since its penetrating power and precision will be so much greater than ordinary bombs.

The theory of the rocket bomb is relatively simple. It may be said to involve only two stages, viz., the transformation of the energy of the rocket charge into kinetic energy, or energy of gas velocity, and the transformation of gas velocity into propulsive effort on the bomb. Each stage is subject to its own separate efficiency, i.e., thermal and propulsive efficiency, and the total efficiency is the product of the two efficiencies, just as in the aeroplane the total efficiency of the propelling system is the combined efficiency of the motor and the aerodynamic efficiency of the airscrew.

The thermal efficiency of a normal rocket depends mainly upon the ratio of combustion pressure to discharge pressure, and with an expansion ratio of 500 it may, theoretically, attain as high a value as 80 per cent. In practice, certain unavoidable losses must be taken into account, such as loss of heat by conduction and the losses arising from expansion. Allowing for such losses, the thermal efficiency will probably not exceed 45-50 per cent., but special considerations apply to rocket bombs. For example, in an ordinary rocket the thrust must last for a lengthy period, whereas prolonged action is not necessary in an aeroplane bomb in order to yield a large increase in its velocity. Thus the rocket thrust need, perhaps, only be produced for about a second, during travel for a few hundred yards, and, consequently, the heat and expansion losses will be reduced and the thermal efficiency will be higher than with an ordinary rocket—probably as high as 75 per cent.

It is possible to design rocket bombs to be of high thermal efficiency without unduly increasing their weight by a large charge of propellant, or by having to provide thick walls to withstand a high internal pressure.

The propulsive efficiency of a rocket is quite small at low speeds and, therefore, the efficiency of rocket bombs is greatly increased by launching them from an aeroplane instead of from a stationary position. For example, a rocket attaining a speed of 300 ft. per sec. from a stationary position will, if launched from an aeroplane flying at 300 m.p.h., attain a maximum speed of 750 ft. per sec., with practically four times the efficiency. Still more will the efficiency increase if the bomb is fired from a gun or projector operating with a propulsion charge to add further to the velocity of the projectile.

To produce the same velocity of the projectile by rocket propulsion about double the weight of propellant required by a gun is needed, but at higher velocities in the region of 1,000-1,700 ft. per sec. the efficiency of a rocket may equal that of a gun, and at still higher velocities will exceed that of a gun, which is fairly constant at about 25 per cent. When the final velocity is to be more than 2,000-2,300 ft. per sec. (according to the initial launching speed), the rocket will be more efficient than the gun using the same weight of propellant. The gun is the more efficient weapon at low initial velocities and the rocket the more efficient at high initial velocities, such as can be obtained by launching from an aeroplane travelling, perhaps, at 350 ft.-400 ft. per sec.

Firing a rocket projectile from the ground is unprofitable. Up to the top of the trajectory, because of gravity, the weight of the projectile has an important influence on the velocity and height attained. As the rocket is ballistically inferior to a shell, by reason of the varying weight of the rocket charge and the constant weight of the casing necessary to contain it, poor results are obtained. In launching the rocket from an aeroplane it is started on its journey, in effect, at the top of the trajectory, and thus the extra weight will improve the performance of the rocket and the variation of weight will be of little importance.

In addition, the variation in the density of the air with height will have an important influence on the performance. By launching a bomb at a sufficient height its range may be made to approximate to the range it would theoretically obtain in a vacuum. Furthermore, the adverse effect of its inferior ballistic qualities will decrease with the air resistance, i.e., at greater heights.

The best method of using a rocket projectile, therefore, is



ANOTHER KIND OF ROCKET.—Some experiments have been devoted to the propulsion of aeroplanes by rocket as well as to obtaining accuracy and penetration for bombs. Above is shown an early rocket of the Manchester Interplanetary Society, which, in Sept. 1936, reached a height of 150 ft. and travelled 250 ft. Projectiles driven by rockets tend to travel in a straight line and not along the curved path normally followed by shells.

to launch it from an aeroplane flying at such speeds as are now commonly attained. A still better result would be obtained if rocket projectiles could be fired from a gun on an aeroplane, but in this respect the weight of the gun and its recoil become of serious moment.

One of the main defects of ordinary rockets, such as signal rockets, is their inaccuracy. This decreases largely in the launching of such bombs from aircraft. This is partly explained by the difference in the duration of combustion in the two cases. In the ordinary rocket the reaction thrust must be maintained for a relatively long period, whereas in the rocket bomb only a short combustion period is required.

The longer the duration of combustion the more is the flight affected by irregularities in the combustion of the charge. At low velocities rocket bombs will therefore have a high dispersion factor. That is to say, that the margin of error will be wider and, consequently, the bombs will spread themselves over a bigger area. Another cause of dispersion is the influence of the wind, which is greater at low than at high velocities, and is likely to be less turbulent at a height than near the earth. A bomb fired from the ground will have its lowest velocity and be most susceptible to the influence of the wind when near the ground, where wind influence is the strongest; the converse will apply to bombs launched from aircraft.

Mention has already been made of the increased penetrating power and accuracy of rocket bombs launched at low flying heights. At high levels the main advantage obtained will be the increased range derived from added velocity. A small increase of velocity by rocket propulsion adds notably to the range. This means that attacks may be launched when bombing aircraft are out of range of the defences of the target and thus bombing becomes safer.

In comparing rocket bombs having a given impact velocity with artillery shells having an equal residual velocity, we may remember that the flight of the shell is relatively flat and strikes at a glancing angle, whereas the aeroplane bomb will strike nearly at right angles, with consequently greater penetrating power.

A rocket bomb may be designed to employ rocket propulsion either operative at the start of its flight or delayed until the terminal portion of the flight. This is a matter of providing suitable fuse mechanism. The maximum impact velocity will be attained by using rocket action at the end of flight, but loss of accuracy will result, so that such bombs will only be suitable for widespread targets, such as a large town with good shelters. They can be launched with equally good effect horizontally, diving or at high level. The rocket charge should come into action when the bomb has attained its natural limit of speed



OFF WITH A BANG.—A view of the model aeroplane, intended to be driven by rocket propulsion, and designed in 1940 by the Manchester Astronautical Association.

by gravitational fall, by which time the bomb will be falling almost vertically, so that the whole of the rocket energy will go to increase the impact velocity, possibly up to 100 per cent.

When the rocket charge is allowed to operate at the beginning of flight, this will, with horizontal or high level bombing, increase the range, but the striking velocity will not be increased beyond the natural limit imposed by the air resistance in relation to the weight of the bomb. On the other hand, by launching the bomb with rocket propulsion in the downward direction, i.e., dive bombing, the impact velocity will be immensely increased, in part by the diving speed and in part by the added rocket speed, provided that the launching takes place at such a height that the bomb does not strike the target long after it has attained its maximum speed. This advantage is of particular importance in light bombs, whose natural maximum speed is lower than that of heavy bombs. With the aid of rocket propulsion and diving at a sufficiently low level, penetration equal to that of a heavy bomb may be obtained.—H.C.S.P.

An Innocent in the Air

I AM A LANDLUBBER. Two years ago I had never flown, even on a five shilling joy ride. To-day I find myself working all day in and around aeroplanes, taking for granted a log book showing some 200 hours' observing in the air.

As I came to flying an almost complete stranger, my reactions were such as many other newcomers to the air will experience in the future, and so may be worth recording.

Essentially, my reaction to flying has been negative. I was an engineer coming to a new job and my concern was aero-motors. The way to a proper understanding of them was to be with them when they were in use, and flying with them came as a matter of course. I made my first flight expecting, like any air line passenger, to find the aeroplane just another kind of vehicle, and nothing has happened since to upset this matter-of-fact attitude.

Regarded as vehicles, most of the aeroplanes I have flown in, being Service machines of distinctly assorted vintage, have left quite a lot to be desired. They are noisy and they are equipped for utility rather than comfort. One does not from choice travel in vehicles which require the passenger to don heated leather suit, oxygen mask and sundry other paraphernalia, but I realise that these discomforts are readily overcome in an aeroplane designed for fare-paying passengers.

As regards the recurring problem of air-sickness, I personally have never (quite) succumbed, yet a friend whose main joy is in travel by land, is hopelessly prone to this malady. There is no great difference between air-sickness and seasickness, really, save that smooth conditions are more readily found in the air than on the sea, and that the movement of an aeroplane generally resembles the quick jumpiness of a small boat rather than the ponderous movements of a large vessel.

Comparing flying with other forms of travel for interest value, my personal verdict is in favour of road travel. One sees many things from the air which are invisible from the ground, but in general the landscape beneath one seems to be a rather dull sort of toytown. The nearest I have ever got to appreciating scenery from above has been to note down certain districts as worthy of further exploration on the ground in the future. I have excluded from this verdict certain enjoyable coastal trips low down, for in this instance

an aeroplane is in reality usurping the place of a steamer.

There is, however, one attraction of flying, in that it introduces most people to a new world above the clouds. Before I ever flew I was familiar with the experience of looking down on the clouds from the mountains of Britain, France, Switzerland and Norway, but the first grey English day on which I was taken flying above the clouds introduced me to something altogether new. In contrast to the dullness beneath, there is something almost magic about the soft white mountains of cumulus cloud which, brilliantly sunlit, rise in magnificent disarray like some pantomime producer's dream. It is a sight I have seen on countless occasions now, but I doubt if I shall ever tire of its constantly changing beauty.

Even flying above the clouds has its bleaker side. There are the days when, with a dull grey roof high above, one looks down on a flat grey ocean of mist, stretching featureless and unbroken as far as the eye can see. It is a cheerless sight, and there is no joy in plunging down into its depths.

Looking at flying as a form of fast transport, I have to remind myself that I see it under singularly favourable conditions. I am accustomed to high cruising speeds which are scarcely economical in fuel, and I am generally concerned with journeys from aerodrome to aerodrome only. Certainly, Great Britain has shrunk for me since I have taken to the air, but for journeys which must be paid for and which start and finish away from aerodromes I have not changed my pre-war view that flying is seldom worth while.

Finally, as regards excitement, flying has proved something of a disappointment to me. My job is not of the safest, since it includes working on experimental aeroplanes, but, fortunately, incidents have hitherto been slight. Normal flying at reasonable altitudes is utterly lacking in excitement, even at modern fighter speeds, so far as my experience goes. Even high-speed manoeuvres produce discomfort without thrills, and flying at great heights can be almost incredibly dull. There is a certain pleasure in the fierce acceleration of a powerful two-seater at take-off, but the only real thrill of speed comes in high-speed hedge-hopping. There certainly is a thrill in skimming the tree tops at full speed, but such flying is rarely permissible in war-time or peace.—L.

AIR TRANSPORT



THE LIGHTS OF NEUTRALITY.—A Short Empire flying-boat of British Overseas Airways, slightly blurred and out of focus, flying over the River Tagus at Lisbon after taking off on a night flight. Lisbon had a trial black-out last month.

Australia's Lost Opportunity

AUSTRALIA recently had the chance to reinforce her fleet of air transport aeroplanes and to regain some measure of independence in air transport operations. Unfortunately, we hear from a reliable source in Australia that she let the chance slip and is now regretting an irretrievable opportunity.

When the Japanese invaded the Netherlands East Indies, K.N.I.L.M. saved 11 of its fleet of some 22 aeroplanes by flying them to Australia. They were offered to the Australian Government. The K.N.I.L.M. representatives first saw the Minister for Air, who passed them on to the Director-General of Civil Aviation. We do not know how much K.N.I.L.M. wanted for its machines or what terms were offered, but, according to our information, the negotiations were very brief.

K.N.I.L.M. knew that the Americans in Australia wanted its machines and had only to tell them they were available for them to be accepted and added to the American fleet.

We do not know which types were saved, but K.N.I.L.M.'s fleet included Lockheed 14, Douglas DC-2, DC-3 and DC-5 landplanes and Grumman G-21 and Sikorsky S-43 amphibians. In the present circumstances types such as these would have been cheap at almost any price.

We gather that the outlook for civil flying in Australia is far from rosy and that air transport has been struggling to maintain its very existence as a civilian organisation. Help might have been had from the United States, but now that U.S. air services are virtually controlled by the military, the Americans have little enough to meet their own needs.

The neglect into which commercial flying has fallen in Australia is disturbing those who had hoped for better things in spite of the War. One who has been associated with Australian flying for many years has expressed the opinion that unless it is put in the charge of a really strong man it will never survive as a national industry after the War. He thinks Australia's air lines will be run for her. That is, perhaps, too gloomy a view, but the trend of events doubtless gives it some justification.

Mr. Hudson Fysh, Managing Director of Qantas Empire Airways, appears to take an even more pessimistic view. He is reported to have said on July 9 that the Empire air routes will face extinction unless Great Britain builds new transport aeroplanes just as she is building new merchant ships. His warning, given two or three months after the rejection of K.N.I.L.M.'s offer, but read in conjunction with the news of this lost opportunity, may cause a little heartburning here as well as in Australia.

A Lode-stamp

A LOCKHEED LODESTAR is illustrated in flight on a new Canadian air mail special delivery stamp. Lodestars are in service on a number of air routes, including those of Trans-Canada Air Lines, but this is probably the first time this type has been depicted on a postage stamp.

Bombers as Transport Aeroplanes?

TRANSPORT AEROPLANES were the subject of several questions in the House of Commons last week. On July 14, during the debate on production, Colonel Llewellyn, Minister of Aircraft Production, said in reply to a question that the Short Stirling had never been built as a transport aeroplane but that the conversion of one type of bomber into a transport aeroplane had been tried. The order for this was given on March 24 and the House would be glad to hear that it was flying that day.

He said also that no large transport aeroplanes were in production in this country, but transports were being built in the United States and it was far better to order where they could get them ready-made. They were taking the precaution of seeing if one of the existing British bombers could be converted into a transport aeroplane, using a great number of the same parts.

On July 15 Mr. Garro Jones asked the Secretary of State for Air whether he was aware of the serious dissatisfaction which existed among the managerial staff of the British Overseas Airways Corporation; that through lack of enough suitable aeroplanes it was prevented from playing its proper part in the important sphere of war transport and was at the same time placed under grave handicaps for the future; and whether he could undertake to give consideration to this branch of the War effort.

Sir Archibald Sinclair said that he was not aware of such dissatisfaction and was sure that those responsible for the direction of the Corporation realised that it had been necessary to accept and operate for war-time tasks a number of aeroplanes designed for other purposes. The question of aeroplanes for transport purposes, including the particular needs of routes operated by the Corporation, was constantly reviewed. Air transport was recognised as an important branch of the War effort, but the important question when deciding whether aeroplanes should be bombers or transports was which would win the War the more quickly.

Further questions were answered by Captain Balfour, who re-affirmed Colonel Llewellyn's statement that the Short Stirling had not been designed originally as a civil aeroplane; that development work on bomber type conversion was not being neglected; and that, as Colonel Llewellyn had said, the majority of the transport aeroplanes must be obtained from the United States.

The Government spokesmen on both days were careful to give no indication as to which type of bomber was being converted, but Colonel Llewellyn conveyed the impression that the converted bomber had flown for the first time on the day on which he spoke—July 14. Captain Balfour confirmed that impression.

SIDELIGHTS FROM THE PAST—XXXII



The World's Height Record—June 30, 1937.

IN 1937 Great Britain regained the World's Height Record, for heavier-than-air craft, when Flight Lieut. M. J. Adam, Royal Aircraft Establishment, Farnborough, reached a height of 53,937 ft. in a Bristol 138 monoplane powered by a special Bristol Pegasus motor with a two-stage supercharger.

This was the fourth time within a year that the World's Height Record had been broken and the third time this record was held by Great Britain. The record had been rising steadily since 1934. In August, 1936, M. George Detre reached a height of about 48,700 ft. at Villacoublay and gained for France the record which had been held by Italy since April, 1934; in September, 1936, Squadron Leader F. R. D. Swain secured it for Great Britain with a height of 49,967 ft.; in May, 1937, Italy won it back with 51,362 ft.; and the following month Flight Lieut. Adam regained it for Great Britain. Italy won it again in October, 1938, with a height of 56,100 ft., a record which still stands.

The Bristol 138 was used by both Squadron Leader Swain and Flight Lieut. Adam, but for the latter's attempt a few modifications were made. Smaller wheels were fitted, the brakes were removed, the Bristol Pegasus motor was overhauled and a new casing fitted, and the airscrew was changed for one of slightly finer pitch.

Flight Lieut. Adam took off from Farnborough at 05.40 hrs. on June 30 and climbed for 1 hr. 35 mins. The sky was clear to begin with and there was practically no wind, but at 7,000 ft. a layer of cloud forced him to head back East from the South-westerly direction he had been following. Then the sun was so low that it dazzled him and he was forced to turn North-East, climbing on that course until he reached about 20,000 ft. over Staines.

Clouds were forming rapidly at 25,000 ft. and at 35,000 ft. the auxiliary blower was engaged. At 38,000 ft. a slight frost began to appear inside the cabin and also formed on the hood and windscreen. He decided that the wind was North-westerly so turned in that direction until he reached his ceiling, which, according to his altimeter, was 55,000 ft. Near the top of his climb the transparent material in the roof of the cabin was cracked by the cold.

With his altimeter registering 55,000 ft., Flight Lieut. Adam closed the throttle and brought the machine down in a fast glide at 150 m.p.h.

He landed at Farnborough at 07.55 hrs. after a total flying time of 2 hrs. 15 mins. The minimum pressure measured during the flight was 77.8 mm. of mercury and



the lowest temperature was minus 48.9 deg. Centigrade, both at the highest point reached.

The Bristol 138 was ordered by the Air Ministry in 1934 for research purposes. It was built of wood and the specification required that it should fly at 50,000 ft. The Bristol Company calculated that the ceiling would be 54,000 ft. The particulars were:—Span, 66 ft.; length, 44 ft.; height, 10 ft. 3 ins.; weights: empty, 4,391 lb., loaded, 5,310 lb.; estimated performance, speed at ground level, 123 m.p.h.; initial rate of climb, 1,040 ft. per min.; at 50,000 ft., 580 ft. per min. According to calculations the motor provided 400 h.p. at sea-level, 457 h.p. at 40,000 ft. with the two-stage supercharger in full blast; and 380 h.p. at 50,000 ft.

A special air-tight suit made of two pieces of rubberised fabric, of which the top part carried a helmet with a large curved window of celluloid-like material, was worn by both Flight Lieut. Adam and Squadron Leader Swain. The two pieces met at the waist where the upper part was clamped on to a steel band at the top of the trousers. Oxygen was fed into the front of the helmet. The reinforced suit was in effect a personal pressure cabin.

The first World's Height Record was set up on August 29, 1909, by M. Latham, of France, at Rheims with a height of 508 ft. in an Antoinette monoplane.

The photographs above show the Bristol 138 coming in to land at Farnborough on June 30, 1937, and, on the right, Flight Lieut. Adam in the special air-tight suit being helped to alight from the Bristol 138. He was killed on Sept. 12, 1938, in a Valentia which crashed just after taking off from Farnborough.

SPORTING MEMORIES—XCVIII

THE winner of the 1934 King's Cup Air Race was the General Aircraft Monospar S.T. 10 (two 90 h.p. Pobjoy Niagara motors), flown by Flight Lieut. H. M. Schofield, with Mr. J. H.



The G.A. Monospar S.T. 10

Stieger, designer of the Monospars, as a passenger. They were handicapped at 122½ m.p.h., but averaged 136 m.p.h. over the course, and early in the race their win was a foregone conclusion.

The S.T. 10 was an improved version of the S.T. 4, with a number of modifications both in structural design and equipment, including a different shape to the fuselage. The most obvious differences were the increased height of the cabin, the more pointed nose and the more angular tail unit, the fin of which faired into the fuselage. The S.T. 10 resembled the S.T. 6, except that the former had the more powerful Pobjoy motors and a fixed undercarriage.

G-ACTS, the first S.T. 10, made its first public appearance at the S.B.A.C. Display at Hendon on July 2, 1934. It was owned by Portsmouth, Southsea and Isle of Wight Aviation Ltd., and is, we believe, still flying on communications duties.

BOOK REVIEWS

Copies of any of the books published in Great Britain can be obtained from "The Aeroplane," Book Dept., Bowling Green Lane, London, E.C.1. Postage on books up to 10s. 6d. is 6d.; orders for £5 or more are post free.

The Real Thing

SPITFIRE PILOT. By Flt. Lt. D. M. Crook, D.F.C.
5½ ins. by 8½ ins. 104 pp. Eight photographs and portrait
frontispiece. Published July 9, 1942, by Faber and Faber.
Price 5s.

THIS is a jolly good book. I wish that there were twice as much at twice the price, and I hope that Flt. Lt. Crook will do the rest when he is a Wing Commander. It is like the first cocktail before dinner. One wants the other half.

There is no fine writing, no introspection, no striving for effect. This is things as they do happen. And it is all in plain English without frills. It is more like Jimmy McCudden's "Five Years in the R.F.C." than anything I have read. Yorkshire has always been proud of 609 Squadron Auxiliary Air Force, and this is a worthy record of its start in the killing business.

Flt. Lt. Crook has lots of useful things to tell us. I like Warrant Officer M., who ordered a bunch of young nuts of officers at the F.T.S. to get their hairs cut. If I ran the R.A.F. I would have about 25 per cent. of the airmen and a lot of officers roped, thrown and sheared. Then he tells part of why there were so many "fatal crashes" in Harvards, "some of them involving very experienced pilots." Senior officers who do not fly but do buy aeroplanes may learn a lot from that passage.

He tells us that after his first night flight he was more tired than he had been for years—R.A.F. doctors please note. I have known good pilots thrown out over this night-flying business. But he says "I don't think there is any training system in the World to touch it (the R.A.F.'s) for thoroughness." All honour to Robert Smith-Barry, who invented the Gosport System.

His descriptions of air fights during the Battle of Britain are not so much vivid as kinematographic. One is there all the time. And his reflection, after a near squeak, "Anyway, it taught me to be a little more cool in the future. One lives and learns—if lucky," has the whole essence of war flying in it. So has the remark: "We now faced the future with an ample confidence that whatever the Germans might do, we could do it far better."

After Lord Trenchard visited the Squadron Crook remarks: "He seemed remarkably young for a man who commanded the R.A.F. in the last war, and he chatted to us for a long time in a very paternal and charming manner, congratulated us on our successes, and said that the only way to win this War was to give the Hun such hell as he never had before and would never want again. We all felt that this was remarkably good advice to be followed whenever possible." Splendid. I have known "Boom" in the last war to pull a beaten and broken squadron together and make it one of the best killing squadrons in the line by just one of those paternal talks. He always will be "remarkably young" if he lives to be 100. And he can still inspire youngsters as he did then.

The story of the German crew with the bewitched compass who landed in Dorset and their machine which landed near Ipswich is a new one on me, and a good one. And the "Arab's Farewell to his Steed" is sloop compared with Crook's farewell to his Spitfire, when he was appointed to the C.F.S. (Now the Empire C.F.S., if you please, not the British Commonwealth C.F.S.—we must be going back to Jingoism.)

Yes! A fine little book. And I hope that Dorothy and Nicholas are going strong.—C.G.G.

Compendium for Ground Crews

AERONAUTICAL ENGINEERING. Edited by R. A. Beaumont, A.F.R.Ae.S. With contributions by 12 specialist authors. 5½ ins. by 8½ ins. 512 pp. Illustrated. Published 1942 by Odhams. Price 6s. 6d.

BY THE TIME the Ancient Mariner had got through with his tale, the Wedding Guest was a wiser man; and it is rather like that with this book where, in 18 chapters and 500 pages, the authors explain the construction and working of most parts of an aeroplane, the internal-combustion engine theory and the modern aero-motors built on it. Its subjects are legion—types of motors and their components; carburettors and superchargers with their jet systems and automatic controls for every shade of circumstance; magneto and coil ignitions and screened sparking plugs; the elaborate lubrication and fuel layouts needed nowadays with their filters, pumps, coolers and balancing; engine starters and installation schemes; airframes, airscrews and the science that has grown up around them; undercarriages and instruments. All this is treated in great detail. Construction, maintenance, overhaul and repair, landplanes and flying-boats are dealt with by

specialists, mostly well-known names in the Industry, in a way for everybody to understand. The whole is written clearly and illustrated with an abundance of line drawings, and should be invaluable to newcomers in aviation and a refresher to the more experienced who may have rusted a little. It has no maths, and it is not a designer's manual, but rather an excellent survey in general terms.—J.H.C.

Vibration and the Engine Designer

PRACTICAL SOLUTION OF TORSIONAL VIBRATION PROBLEMS. By W. Ker Wilson, Ph.D., M.Sc., Wh.Ex., M.I.Mech.E. Vol. II. 5½ ins. by 9 ins. 694 pp. Illustrated. Published 1941 by Chapman and Hall. Price £2 2s. Second Edition.

THE SCOPE of this work is wide and covers the fields of electrical, aeronautical and automobile engineering. It is in every respect a practical treatise written to meet the needs of the engineer designer rather than those of the mathematician and physicist. Since the issue of the first edition an increasing amount of attention has been given to the study of torsional vibration, its causes, effects and cures, and in order to present an up-to-date treatise the text has been almost rewritten, trebled in its total bulk and is now in two volumes. The second of these is now under review. The increase in quantity of information has not in any way impaired the quality of the work, which retains its original style, clarity and singleness of purpose.

As may be expected in such a book, a certain amount of descriptive matter is contained therein. It deals with such items as research apparatus, torsionographs, vibration dampers, absorbers and de-tuners. The better-known and proven types are described and the merits, faults and limitations of the various units are outlined. Such details have an exceedingly important part to play in this sphere of engineering, and the information given should be of value. The avoidance of critical speed zones becomes increasingly difficult where power units have to operate over wide limits of R.P.M., as in aero and automobile engines. This has led to the introduction and successful development of the rotating pendulum vibration damper or absorber and an entirely new section dealing with the theory and practice of this method of tuning adjustment has been added.

The strength of materials as affected by vibration influences is another aspect which has recently been pursued more zealously. Much useful information has been published in scattered places and is very often obscured by other matter. Dr. Wilson has sifted much of this, and by extending the text has supplied the reader with a fairly concise résumé of the principal factors affecting the suitability of various materials for use in power transmission through rotating shafts. He discusses the advantages to be gained by the use of alloys, by heat treatment and by the application of the different surface finishes nowadays employed. Effects of shaft form, such as the presence of discontinuities of section, of fillet form, the presence of oil holes and other factors which give rise to stress concentration are clearly explained and maximum safe stress values and stress factors are given, including allowances for the presence of external corrosive influences.

The use of the internal-combustion engine for generator drives where steadiness of current output is essential, has presented its own problems in which torsional vibration plays its individual part. The author concludes his work with an outline of the calculation of flywheel design for this type of unit. In general, the work is most comprehensive and covers all the present known aspects of the torsional vibration subject as experienced in the design of power units, and is free from all extraneous matter and can be recommended to all those who wish to acquire a fuller knowledge of the subject.—D.M.C.

First-hand Accounts

WE SPEAK FROM THE AIR. Broadcasts by the R.A.F. 5 ins. by 7½ ins. 72 pp. Issued for the Air Ministry by the Ministry of Information, March, 1942. Price 6d. net.

UNADORNED accounts of action, like trees in winter, rank with the classic examples of art. Thus the telling of these acts well done, vies with "The Battle of Britain" in style, while surpassing it in vividness, because, although no names are given, the narrative is based throughout on personal experience. These 23 heroic airmen and one airwoman speak for the ordinary people of Great Britain who have been called upon for extraordinary effort and have magnificently answered the challenge; each episode is an epic in epitome.—J.J.B.

FORTHCOMING EVENTS

- July 24.—**Hoddesdon**.—S.C. No. 128 (Hoddesdon).—Meeting at the Clock House.—19.30 hrs.
 July 24.—**Stapleford**.—S.C. No. 159 (South Erewash R.S.C.).—Meeting at the Constitutional Club.—18.45 hrs.
 July 25.—**Stoke Park**.—R.O.C.C. Branch 1 (Guildford).—Meeting at County Technical College.—15.00 hrs.
 July 26.—**Watford**.—R.O.C.C. Branch 3 (Hendon).—Meeting at Watford Public Library.—10.30 hrs.
 July 26.—**Lincoln**.—R.O.C.C. Branch 39 (Lincoln).—Meeting at St. Martin's Hall.—14.45 hrs.
 July 26.—**Berkswell**.—R.O.C.C. Branch 54 (Berkswell).—Meeting at Berkswell.—14.30 hrs.
 July 26.—**Louth**.—R.O.C.C. Branch 78 (East Lincs.).—Meeting at the Monks Dyke School.—14.30 hrs.
 July 26.—**Torquay**.—R.O.C.C. Branch 80 (Haytor).—Meeting at the Grey Cars Garage, Torwood Street.—18.30 hrs.
 July 27.—**North Birmingham**.—S.C. No. 15 (N. Birmingham).—Meeting at Sir Joseph Mason's Schools.—19.30 hrs.
 July 27.—**London**.—**London Regional Council**.—Development Meeting.—At Geological Museum, South Kensington, 19.00 hrs.
 July 27.—**London**.—S.C. No. 156 (Islington).—Meeting at Northern Polytechnic, Holloway Road.—19.00 hrs.
 July 29.—**Brookland**.—R.O.C.C. Branch 100 (Ashford).—Meeting at the Alliance Inn.—19.15 hrs.
 July 29.—**Blackpool**.—S.C. No. 2 (Blackpool).—Meeting at Talbot Road, Police Station.—19.15 hrs.
 July 29.—**Blackfriars**.—S.C. No. 12 (Blackfriars).—Meeting at the Cinema, Unilever House.—18.00 hrs.
 July 29.—**Sheffield**.—S.C. No. 178 (Sheffield and District R.S.C.).—Meeting at the Victoria Hall.—19.00 hrs.
 July 29.—**Newcastle**.—S.C. No. 272 (Tyneside).—Meeting at the Crows Nest Hotel, Haymarket.—19.00 hrs.
 July 30.—**Doncaster**.—S.C. No. 106 (Doncaster).—Meeting at the Trades Hall, North Bridge.—19.15 hrs.
 July 30.—**Westminster**.—S.C. No. 142 (City of Westminster).—Meeting at Thornycroft House, Smith Square.—18.00 hrs.
 July 30.—**Histon**.—S.C. No. 145 (Cambridge and District).—Meeting at Chivers and Sons, Ltd.—20.00 hrs.

Institute of Aeronautical Engineers

MR. C. G. VOKES has lost by enemy action the original certificate which he received as an Associate Member of the Institute of Aeronautical Engineers when it was founded in 1919. There is no longer an Institute to issue a duplicate. He asks any other original member who still has a certificate to lend it to him so that he may have it copied for sentimental reasons.



AIR STAFF APPOINTMENTS.—Air Vice-Marshal G. Jones, the new Chief of the Australian Air Staff (second from right) with R.A.F. members of the staff of Lt.-Gen. George H. Brett, Commander of the Allied Air Forces in the South-west Pacific. (From left to right) Group Capt. C. S. Wiggins, Director of Communications, Wing Cdr. A. L. Walters, Assistant Director of Operations, Wing Cdr. V. E. Hancock, Assistant Director of Plans, and Air Commodore J. E. Hewitt, Director of Intelligence.

New Patents

Applications Accepted

- 546,038.—R. W. Corbitt.—Propulsion of aircraft.—Dec. 23, 1940.
 546,121.—H. Dreyfus, D. Finlayson and W. I. Taylor.—Light structures.—Dec. 24, 1940.
 546,001.—B. F. Goodrich Co.—Control of inflatable units, such as aerofoil inflatable units for preventing ice accumulation.—Jan. 19, 1940.
 546,091.—Dowty Equipment Ltd. and F. Bastow.—Mounting arrangements for shock absorbers and like resilient means.—Jan. 10, 1941.
 546,067.—R. W. Jameson.—Apparatus for preventing ice formation on aircraft or for de-icing aircraft.—May 26, 1941.
 Opposition period expires Sept. 8, 1942.
 Printed specifications available July 23, 1942.

R.A.F. BENEVOLENT FUND
 1, SLOANE STREET, S.W.1

PERSONAL NOTICES

BIRTHS

- Allies**.—On July 11, at Bury St. Edmunds, to Kay, wife of Flt. Lt. W. D. Allies, R.A.F.—a son.
Arkell.—On July 9, at Cheshire, to Joanne (née Norman), wife of Flt. Off. Douglas Arkell, M.B., B.S.—a daughter.
Bamber.—On July 11, at the West Middlesex Hospital, to Lorna (née Tarr), wife of D. P. Bamber, M.B.E., R.A.F.—a daughter.
Bradford.—On July 11, in London, to Josephine (née Markey), wife of Flt. Off. H. W. Bradford, M.R.C.S., L.R.C.P., D.Ch.—a son.
Coombs.—On July 15, at Woking, to Betty (née Brakenridge), wife of Flt. Off. Gordon Coombs, M.R.C.S., L.R.C.P., R.A.F.V.R.—a son.
Cowell.—On July 13, at Hove, to Diana, wife of Plt. Off. R. M. Cowell, R.A.F.—a daughter.
Croft-Rees.—On July 11, at Worcester, to Lucy Elisabeth (née Adlard), wife of Sub-Lt. (A) J. H. Croft-Rees, R.N.V.R.—a daughter.
Cumming.—On July 8, at Lincoln, to Peter (née McCann), wife of Flt. Lt. J. N. S. Cumming, R.A.F.—a son.
Cummings.—On July 10, at Tuffley, to Esme, wife of Flt. Off. L. H. G. Cummings, R.A.F.V.R.—a daughter.
Gasper.—On July 13, at Oxford, to Norah (née Kinahan), wife of Plt. Off. C. M. Gasper, R.A.F.V.R.—a son.
Glover.—On July 6, at St. Ives, to May (née Beddard), wife of Sqdn. Ldr. C. H. Glover, O.B.E.—a son.
Graham.—On July 7, at Stansted, to the wife of Sqdn. Ldr. Sir Richard Graham, Bt., R.A.F.V.R.—a son.
Harris.—On July 12, at Peterborough, to Judith (née Parker), wife of Plt. Off. W. H. Harris, R.A.F.V.R.—a daughter.
Hepburn.—On July 11, at Eltham Cottage Hospital, to Rosemary (née Rawlinson), wife of Flt. Lt. P. B. Hepburn, R.A.F.V.R.—a daughter.
Lewis.—On July 7, at Skirlough, to Elizabeth (née Holtby), wife of Sqdn. Ldr. P. E. Lewis, D.F.C.—a son.
Lynn.—On July 6, at Hunstanton, to Beatrice (née Sharman), wife of Wg. Cdr. L. A. Lynn, D.F.C.—a daughter.
Norris.—On July 4, at Guildford, to Margaret, wife of Flt. Lt. H. H. Norris, R.A.F.V.R.—a son.
Paget.—On July 7, at Caversham, to Elva, wife of Plt. Off. S. H. Paget, R.A.F.V.R.—a son.
Payne.—On July 12, at Hampton Court, to Kay (née Gascoigne), wife of Sgt. G. M. Payne, R.A.F.V.R.—a son.
Podmore.—On July 9, at Grahamstown, S. Africa, to Frances Edith, wife of Plt. Lt. J. C. Podmore, R.A.F.V.R.—a son and daughter.
Reason.—On July 11, at Scarborough, to Peggy (née Lobb), wife of Flt. Off. S. J. Reason, R.A.F.V.R., attached R.N.Z.A.F.—a son.
Richardson.—On July 9, at Fulmer, to Pinkie (née Clifford), wife of Plt. Off. G. Richardson, R.A.F.V.R.—a daughter who only lived a few hours.
Roberts.—On July 10, at Wooler, to Eve, wife of Sqdn. Ldr. K. C. Roberts, A.F.C.—a daughter.
Roots.—On July 10, at Hove, to Sylvia (née Calvert), wife of J. V. O. Roots, R.A.F.V.R.—a daughter.

- Sage**.—On July 11, at Doncaster, to Peggie, wife of Sqdn. Ldr. R. J. Sage, A.F.C.—a son.
Shapcott.—On July 8, at Leeds, to Freda, wife of Wg. Cdr. M. S. Shapcott, R.A.F.—a son.
Stebbing.—On July 13, at Plymouth, to Margaret (née Seed), wife of Flt. Lt. J. R. Stebbing, Nigerian Admin. Service—a daughter.
Underhill.—On July 11, at Sutton, to Doris Mary (née George), wife of Flt. Lt. H. J. Underhill—a daughter.
Wade.—On July 12, at Guildford, to Josephine, wife of Flt. Lt. T. S. Wade, D.F.C.—a son.
Way.—On July 6, at the Middlesex Hospital, to Jean (née Love), wife of Plt. Off. Robert Way—a daughter.
Wilkinson.—On July 14, at Kidderminster, to Eileen (née French), wife of Flt. Off. John Wilkinson, R.A.F.V.R.—a son.

FORTHCOMING MARRIAGES

- Atkins—Rothband**.—The engagement is announced, and the marriage will take place shortly in Cape Town, between Dennis A. F. Atkins, S.A.A.F., son of the late Capt. Arthur Atkins, and of Mrs. H. M. Atkins, of Johannesburg, and Joan Olga Eleanor Rothband, daughter of Mrs. W. H. Furlonger.
Etheridge—Sturgess.—The engagement is announced between Flt. Lt. G. A. Etheridge, D.F.C., younger son of Mr. and Mrs. F. P. Etheridge, of Eastbourne, and Florence Helen, elder daughter of Mr. and Mrs. H. A. Sturgess, of Southgate, London.
Harland—Romanis.—The engagement is announced between Flt. Off. R. E. W. Harland, R.A.F.V.R., elder son of Mrs. Harland, of Minchinhampton, Stroud, and Doreen Rosalind Romanis, elder daughter of Mr. and Mrs. Romanis, of London and Godalming.
Lavery—Pitcher.—The engagement is announced between Plt. Off. G. H. Lavery, R.A.A.F., only son of Mr. and Mrs. Lavery, of Melbourne, Australia, and Dorothea Trafford Pitcher, A.I.D., of Bristol, eldest daughter of Mr. and Mrs. Pitcher, of Armadale and Melbourne.
Matthews—Burrough.—The engagement is announced between Plt. Off. Keith Matthews, elder son of Major and Mrs. J. M. Matthews, of Agra, India, and Margery, younger daughter of the late Canon C. J. Burrough and Mrs. Burrough, of Bristol.
Morello—Green.—The engagement is announced between Sqdn. Ldr. F. V. Morello, R.A.F., son of the late Mr. and Mrs. A. V. Morello, of Shillong, and Diana Sierwerda Lancelyn, younger daughter of Major and Mrs. G. A. L. Green, of Bebington, Cheshire.
Morrison—Rocker.—The engagement is announced, and the marriage will shortly take place, between Flt. Lt. E. A. Morrison, D.F.C., R.A.F.V.R., only son of Mrs. E. A. Morrison, of New York, and Mrs. Rodker, only daughter of the late Mr. and Mrs. S. E. Mackenzie-Smith, of March, Cambridgeshire.

MARRIAGES

- Amberton—Harvey**.—On July 11, at Laleham, Lt. A. R. Amberton, R.N.V.R., son of Major and Mrs. Amberton, to S/O Margaret Yorke Harvey, W.A.A.F., daughter of Capt. and Mrs. Harvey.

- Biddlecombe—Ottley**.—On June 27, at Fareham, Plt. Off. E. H. Biddlecombe, R.A.F.V.R., eldest son of the Rev. and Mrs. S. H. Biddlecombe, of Whippingham, I.O.W., to Diana Sydney Ottley, only child of the late Col. G. G. Ottley, K.O.Y.L.L., and the late Mrs. Ottley, of Fareham.
Curnow—Behr.—On July 11, in London, Plt. Lt. P. W. Curnow, D.F.M., R.A.F., to Marguerite, younger daughter of Mrs. R. Behr, of London.
Edgar—Dorey.—On July 11, P. R. Edgar, R.A.F.V.R., younger son of the late Mr. and Mrs. Neil Edgar, of Enfield, to Jean Lilian Dorey, only daughter of Mr. and Mrs. E. W. Dorey, of Hadley Wood.
Fitzsimmons—Carrington.—On June 27, at Coulsdon, Edward Fitzsimmons, R.A.F., to Joyce Carrington.
Gosling—Gibson.—On June 20, at St. Nicholas, Otham, Flt. Lt. R. C. Gosling, R.A.F.V.R., to Dorothy T. Gibson.
Gray—Walmesley.—On July 4, at Shenfield, Flt. Off. Trevor Gray, B.Sc., R.A.F.V.R., elder son of Mr. and Mrs. Tosco Gray, of Aberdeen, to Dorothea Jane, only daughter of Mr. and Mrs. Thomas Walmesley, of Shenfield.
Livingstone-Bussell—Grierson.—On July 2, at Durban, Flt. Lt. David Livingstone-Bussell, to Elizabeth, eldest daughter of Mr. Henry Grierson and the late Mrs. Grierson.
Macdonald—Hibberdine.—On July 12, at Washington, D.C., U.S.A., Flt. Lt. D. C. S. Macdonald, R.C.A.F., son of the late Mr. and Mrs. Alexander Macdonald, of Vancouver, British Columbia, to S/O Joan Mary Isla Hibberdine, W.A.A.F., only daughter of the late H. J. Hibberdine and Mrs. Alexander Hall, of Fetcham, Surrey.
Owen—Ball.—On July 9, at Marlow, T. G. Owen, R.A.F., only son of Mr. and Mrs. F. P. Owen, of Highgate, to Marjorie, only daughter of Mr. and Mrs. A. J. Ball, of Muswell Hill.
Rook—Todd.—On July 11, at Bristol, Wg. Cdr. A. H. Rook, D.F.C., son of the late Mr. S. H. Rook and Mrs. Bagshaw, of Nottingham, to Deborah Eileen, elder daughter of Mr. and Mrs. R. H. Todd, of Highfield, Nailsea.
Sayer—Bros.—On July 7, at St. Andrews, J. D. Sayer, F.A.A., second son of Mr. and Mrs. G. R. Sayer, to Louise Mary, only daughter of the late Rev. H. K. Bros and Mrs. Bros, of St. Andrews, Fife.
Stewart—Robertson.—On July 6, at Aldingham Parish Church, Plt. Off. W. B. Stewart, R.A.F.V.R., second son of the late V. B. Stewart, C.B.E., to Mary Edith Robertson, W.R.N.S., only daughter of the late J. M. Robertson, C.B.E., of Ayrshire.
Syme—D'Eath.—On July 10, at Bothwell, David Syme, R.A.F., only son of Mr. and Mrs. A. M. Syme, of Bothwell, to Gladys Joan (Sheila), W.R.N.S., only daughter of Mr. and Mrs. P. J. R. D'Eath, of London.
Taylor—Hannam.—On July 14, at Sourton, Plt. Off. D. W. B. Taylor, R.A.F., B.Sc., M.R.C.V.S., son of Mr. and Mrs. R. B. Taylor, of Yeovil, to Lilian Mary (Pat), youngest daughter of Mr. and Mrs. S. C. Hannam, of Bourton, Dorset.

CORRESPONDENCE

The Fascination of the Dive Bomber

COMMENTING on Mr. C. E. T. Macguire's letter in THE AEROPLANE of July 10, you assert that Rommel's attribution of victory at Tobruk to his Stuka squadrons was a cunning device to lure the British authorities into switching over production to dive bombers. You imply, therefore, that the German Army and Luftwaffe share your low opinion of the dive bomber. In that case, how do you explain the thousands of Ju 88s and Do 217s being manufactured at this moment, as dive bombers?

Many of your readers will continue to believe that a squadron of dive bombers over a battlefield where air superiority is claimed would be worth 50 heavy bombers grounded in England for weeks at a time, waiting for a "blue moon" trip over Germany.

We hear a lot about the "failure" of Stukas over Britain, but when Stukas sank a crack anti-aircraft cruiser in a British harbour in two minutes with repeated direct hits, and with the loss of only one machine, the British communiqué referred to "enemy bombers"—not dive bombers.

The Stuka, obsolete though it may be, has proved itself over and over again the most economical effective military weapon in the World. The few fatal casualties it inflicts are without significance beside the wide radius of demoralisation it produces as though by magic. Every soldier who has suffered attack by dive bombers will vote them more paralyzing than a hundred shell bombardments or high level bombings, however intense.

If Göring were offered a squadron of Kittyhawks for every Ju 88—or even Stuka—he possesses he would not be fool enough to accept.

ACK-ACK GUNNER.

[In the Ju 88 and the Do 217 the Germans have bombers which can be used either for precision bombing or for dive bombing up to moderate angles. They appear to have no modern equivalent of the Stuka either in production or on the stocks. We have never pretended that there are no occasions on which low level bombing is desirable, and experience in Egypt seems to have shown that low bombing and ground strafing can achieve all that could be done by dive bombing. The Army's dislike of dive bombing is easy to understand, but we are satisfied that the Germans have found British bombing without dive bombers as unpleasant in Egypt as the British Army found dive bombing in France and Greece.—ED.]

Medals and Distinction

THE LETTER from C. G. Grey, published in your issue of June 19, is, to my mind, rather unfair in that there are many men with sincere intentions (and not on account of any political considerations or of snobbery) who desire to see one type of decoration awarded for all ranks in the armed Forces and thus to make it clear that there is no question of certain ranks receiving preferential treatment.

In the publication "A.B.C. of the R.A.F." there are some interesting figures relating to R.A.F. awards during the first two years of the War. From this I quote:—

To Officers:		To Other Ranks:	
D.F.C. 1,273 (71 with bar).		D.F.M. 903 (23 with bar).	
A.F.C. 143 (2 with bar).		A.F.M. 32.	
D.S.O. 77 (6 with bar).		No equivalent.	

If the disparity between the numbers of awards to commissioned as against those to non-commissioned ranks is not apparent to your correspondent, he cannot accuse others of prejudice or "class" preferences. Also, it seems unjust to me that there should be awards of the D.S.O. to officers and no equivalent decoration for other ranks.

Discussion of other points so graphically raised by your correspondent I leave to others, but I feel sure his assertion that "there is no class distinction in the awarding of commissions, unless differentiation between different classes of brain power be class distinction," will call forth jeers of derision from air crew N.C.O.s wherever his letter may be read.

Is it not a fact that N.C.O.s skipper some of our most modern aeroplanes and have officers as members of their crews?

Finally, anyone who reduces discussion of these subjects to mere political dogma, and uses the dog-eared expression "class distinction" against the interests of National unity merits condemnation (whether he be a "Blimp" or a "nit-wit"); but while there appear to be distinctions between awards to different ranks so long will criticism continue.

L. ELLWOOD.

The fact that goods made of raw materials in short supply because of war conditions are advertised in this journal should not be taken as an indication that they are necessarily available for export.

Ground Threads

THE EDITORIAL COMMENT following the letter on the above subject is open to criticism on the grounds that it is liable to mislead. A cylinder flange held to a crankcase by studs cannot impose on them an alternating stress, for the obvious reason that it is impossible for the studs to be subjected to a compressive stress by such an arrangement. Further than this, the load on the studs need not be more on the power stroke than during any other part of the cycle. Indeed, the stress on the studs should be as much when the engine is stationary as during take-off. All that is necessary for this condition is for the nuts to be tightened so that the initial screwing up load is just in excess of that due to the piston load.

The cross-sectional area of the flange is so much larger than that of the stud that the elastic compression of the flange is small compared with elastic elongation of the stud. Since the total load on the studs is more than the piston load, the face of the flange cannot leave the crankcase, and therefore the studs have the same length whether the engine is running or not.

As the elastic stretch is a measure of the stress, there can be no change in the latter when the stud length remains constant.

Ground threads having a good finish are certainly the best for dealing with high stress, and an added advantage is that they are less liable to "pick up."

It is a common misconception that the "screwing up" loads add to the applied load in all cases. In some cases they do, but in many cases, including cylinder holding down studs, they do not.

R. C. McLEOD, A.C.G.I., A.M.I.Mech.E.

Drawings by Clark

I HAVE just obtained a copy of your issue dated April 24, 1942, which contains the really superb sectional drawing of the Halifax II by Mr. J. H. Clark.

In your February 27 issue you referred to Mr. Clark's Stirling as his supreme achievement but, in my humble opinion, his Halifax is an even greater triumph of the draughtsman's art.

I have always thought Mr. Clark's drawings to be one of THE AEROPLANE's finest features, and I think it is a really fine achievement to produce such splendid and informative drawings as those of the Stirling and the Halifax under War-time conditions.

Now I am looking forward to seeing Mr. Clark's Manchester and Lancaster.

Wishing THE AEROPLANE the continued success it deserves.

Pretoria, South Africa.

R.T., R.A.F.



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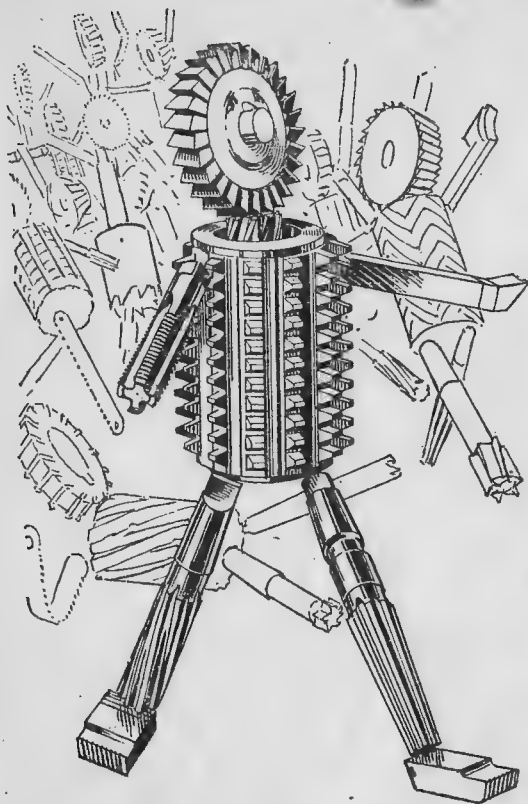
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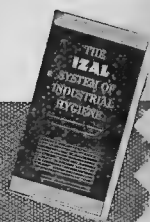
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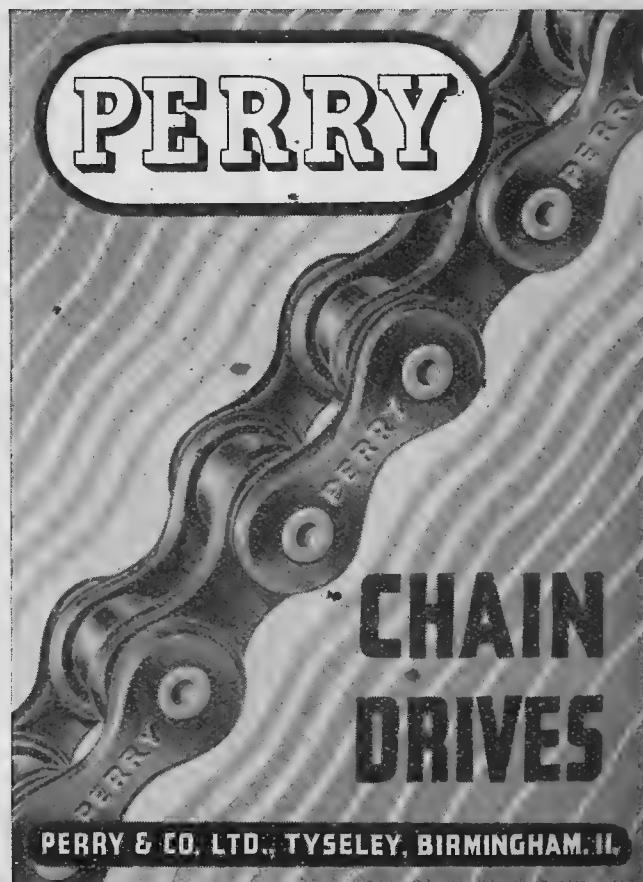
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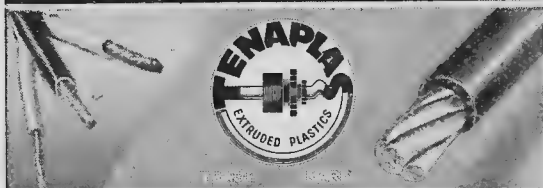
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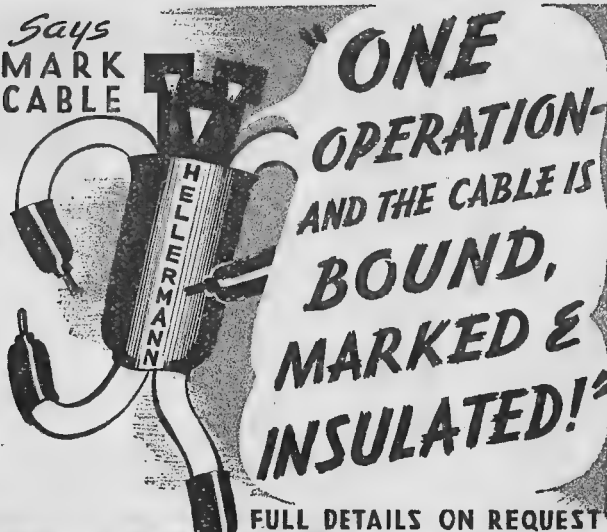
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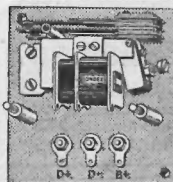
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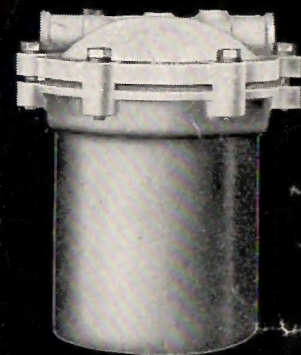
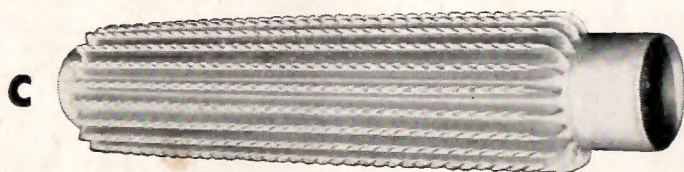
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